Recovering from COVID-19 in 2021

Changes to Implementation and Consequences for Measurement.

Barbara D. Goodson
EIR Evaluation Technical Assistance Team
Effects of COVID on EIR Implementation and Impact Evaluations

Study Population

- Treatment
- Control
COVID Has Disrupted All Aspects of Learning for Students
Speed of Transition to Online Learning Has Raised Concerns about Quality of “Emergency Remote Learning”
COVID Is Pushing New Teaching Approaches for Which Teachers have Limited Experience or Training

Only 1 out of 3 teachers report having had recent training on using computers in instruction.
COVID Pushing Students and Families into New Ways of Learning for Which They Do Not Have Experience, Training, Tools

### Students
- Little experience using computers for learning purposes

### Families
- Expected to supervise learning at home when also trying to juggle jobs/child care and often without technology skills
Schools Like Those Serving EIR Students May Be Slower in Planning for Distance Learning

Prepared DISTANCE LEARNING PLANS by district

Districts serving students of color and students experiencing poverty were slower and less likely to provide concrete distance learning plans.

Note: Council of Great City Schools (CGCS): leaders of 67 largest urban public school systems in US
Students Prioritized by EIR Likely to Have Unequal Access to Internet

Households with
INTERNET ACCESS
for their children

Source: UAS

USC Center for Economic and Social Research’s Understanding America Study: Understanding Coronavirus in America tracking survey, 2020
## Spring 2020: COVID Challenges EIR Implementation

| Goal 1: Implement innovative intervention models as planned | • Implementation abruptly and substantially diminished  
• Limited opportunity to support teachers |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Goal 2: Deliver innovative interventions to high needs schools and students</td>
<td>• EIR programs serving more than 50,000 K – 12 students were interrupted</td>
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| Goal 3: Conduct high quality implementation evaluation | • Logic models and fidelity measures no longer suited to modified programs  
• Not clear how to measure fidelity for different versions of program model |
| Goal 4: Conduct rigorous impact evaluation | • No state test scores from spring 2020 |
**Goal 1: Implement innovative intervention models as planned**
- Large investment to modify for online implementation
- No evidence on effectiveness of online vs. in-person instruction
- Challenges both for ongoing and new programs

**Goal 2: Deliver innovative interventions to high needs schools and students**
- Nearly 1/3 of grants delayed implementation
- More than 75,000 K – 12 students not served
- Barriers to access may mean partial exposure for high needs students

**Goal 3: Conduct high quality implementation evaluation**
- Logic models & fidelity measures must be adapted to new program models
- How to measure fidelity for multiple, changing versions of program model

**Goal 4: Conduct rigorous impact evaluation**
- No 2020 testing may call for increased recruitment, additional implementation years, and/or grant extensions
As a Result of COVID, EIR Grants Have Had to Adapt Their Interventions to be Delivered Through Blended Instruction or Online
As a Result of COVID, EIR Grants Have Had to Adapt their Implementation Evaluations

- Develop alternate versions of their logic model for online vs in-person delivery
- Develop alternative versions of their fidelity measure to align with multiple logic models
- Determine how to analyze and report fidelity of different models
Evaluator Steps to Adapt Implementation Evaluation When Intervention Changes

**STEP 1**
Review logic model & modify, if needed

**STEP 2**
Review fidelity measure & modify, if needed

**STEP 3**
Track versions of program model being implemented

**STEP 4**
Assess and report fidelity for all versions of program model to tell your story
### Key Components

- Teacher Supports & Coaching
- Coding Curriculum (Software & Equipment)
- Work-Based Internships

### Mediators

- Improved computer science instruction
- Increased student experience with coding
- Increased student knowledge of CS industry

### Student Outcomes

- Increased engagement in computer science
- Improved computational thinking skills
- Increased interest in computer science career

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**Step 1. Review Logic Model for Hands-On Computer Science Program: Original In-Person Model**
Step 1a. Modify Logic Model When Intervention Becomes a Virtual Model and One of the Key Components Changes

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Step 1b. Modify Logic Model When Intervention Becomes a Virtual Model and One of the Key Components Drop Out

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2020 Education Innovation and Research (EIR) Project Directors and Evaluators Technical Assistance Meeting
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### Key Components
- Teacher Supports & Coaching
- Coding Curriculum (Software & Equipment)

### Mediators
- Improved computer science instruction
- Increased student experience with coding

### Student Outcomes
- Increased engagement in computer science
- Improved computational thinking skills
- Increased interest in computer science career
Step 1c. Modify Logic Model When Intervention Becomes a Virtual Model and One of the Key Components Is Defined Differently

**Key Components**

**Teacher Supports & Coaching (In-Person)**
- Summer institute
- Monthly grade level meetings
- Coaching (observations & feedback meetings)

**Coding Curriculum (Software & Equipment)**

**Mediators**

- Improved computer science instruction
- Increased student experience with coding

**Student Outcomes**

- Increased engagement in computer science
- Improved computational thinking skills
- Increased interest in computer science career
### Step 1c. Modify Logic Model When Intervention Becomes a Virtual Model and One of the Key Components Is Defined Differently

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<td>Increased engagement in computer science</td>
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<tr>
<td>• Online training sessions</td>
<td>Increased student experience with coding</td>
<td>Improved computational thinking skills</td>
</tr>
<tr>
<td>• Grade level video meetings</td>
<td></td>
<td>Increased interest in computer science career</td>
</tr>
<tr>
<td>• Coach feedback form (observation of online teaching)</td>
<td></td>
<td></td>
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<td>Coding Curriculum (Software &amp; Equipment)</td>
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Creating an Aligned Fidelity Measure: Initial Steps in Defining How to Measure Implementation of Key Components

-1- Define fidelity of implementation of key component
  - Usually multi-part
  - e.g., Fidelity of implementation = teachers participate in all initial and follow-up training opportunities provided by program

-2- Restate definition into a set of measurable indicators
  - Quantitative
  - e.g., “Teachers attend initial 5-day training, quarterly meetings, annual 1-day re-training in years 2-3, and monthly coaching”

-3- For each indicator, determine level of implementation and scores for levels
  - Usually ordinal
  - e.g., 1 = low level of implementation; 2 = moderate level of implementation; 3 = high level of implementation
Step 2a. Modify Fidelity Measure to Align with Revised Logic Model Where One Key Component Changes for Virtual Model

### Key Components
- Teacher Supports & Coaching
- Coding Curriculum (Software & Equipment)
- Webinars on Computer Science Careers
- Work-Based Internships

### Mediators
- Improved computer science instruction
- Increased student experience with coding
- Increased student knowledge of CS industry

### Student Outcomes
- Increased engagement in computer science
- Improved computational thinking skills
- Increased interest in computer science career
Step 2a: New Definition of Virtual Version of Key Component

Original Key Component In-Person Model: Work-Based Internships

- Each industry mentor attends one-day training on responsibilities
- Each student assigned to trained industry mentor
- Student goes to industry site & shadows mentor 2 afternoons per month
- Program organizes career fair
- Each student-mentor pair co-presents about internship experience

Revised Key Component in Virtual Model: Webinars on STEM Career Opportunities

- Series of 5 webinars, each led by a representative in a different STEM industry
- Student attends 4 of 5 webinars
- Student actively participates in at least 3 webinars (active participation = types in at least 1 question/comment)
Step 2b. Modify Fidelity Measure to Align with Revised Logic Model Where A Key Component Drops Out in Virtual Model

Key Components
- Teacher Supports & Coaching
- Coding Curriculum (Software & Equipment)
- Work-Based Internships

Mediators
- Improved computer science instruction
- Increased student experience with coding
- Increased student knowledge of CS industry

Student Outcomes
- Increased engagement in computer science
- Improved computational thinking skills
- Increased interest in computer science career

Dropped from fidelity
Step 2c. Modify Fidelity Measure to Align with Revised Logic Model Where A Key Component Changes Definition in Virtual Model

Key Components

Teacher Supports & Coaching (Virtual)
- Online training sessions
- Grade level video meetings
- Coach feedback form (observation of online teaching)

Coding Curriculum (Software & Equipment)

Mediators

Improved computer science instruction

Student Outcomes

Increased engagement in computer science

Increased computational thinking skills

Increased interest in computer science career
Step 2c. Fidelity Measure Modified to Reflect Changes in How the Same Key Component is Implemented in Virtual Model

In-Person Training & Coaching Model
Teacher participates:
- 5-day summer institute
- 9 monthly grade-level teacher meetings
- Feedback meetings with coach on 4 observations of classroom instruction

Virtual Training & Coaching Model
Teacher participates:
- Three 4-hour online training sessions
- With video on for at least 76% of time
- 4 quarterly video grade-level teacher meetings
- Feedback from coach on 3 observations of teacher’s online instruction
Step 3. Track Versions of the Program Being Implemented Across Sites and Over Time

- Track across sites
- Track over time
- Monitor program versions
Tracking Implementation to Understand Differences Across Sites & Over Time: Even More Important During COVID

- Analysis of fidelity of implementation will need to take account of which versions of program model are being implemented, when and with whom
  - Which versions: Virtual, blended, in-person
  - Same or different versions in different schools
  - Same or different versions in each school over time

<table>
<thead>
<tr>
<th>School 1</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>K – 2nd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd – 5th</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School 2</td>
<td></td>
<td></td>
</tr>
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# Step 4. Analysis and Reporting Fidelity of Implementation for Teacher Supports and Coaching Key Component

<table>
<thead>
<tr>
<th><strong>Virtual Delivery</strong></th>
<th><strong>In-Person Delivery</strong></th>
<th><strong>Overall (Full Sample)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fidelity not met</td>
<td>Fidelity met</td>
<td>Fidelity not met</td>
</tr>
<tr>
<td>50% of teachers</td>
<td>85% of teachers</td>
<td>77% of teachers</td>
</tr>
<tr>
<td>participated in:</td>
<td>participated in:</td>
<td>met participation</td>
</tr>
<tr>
<td>3 online training</td>
<td>5-day summer</td>
<td>thresholds for training</td>
</tr>
<tr>
<td>sessions</td>
<td>institute</td>
<td>&amp; coaching</td>
</tr>
<tr>
<td>4 video grade-level</td>
<td>9 monthly grade-level</td>
<td>Fidelity threshold</td>
</tr>
<tr>
<td>meetings</td>
<td>meetings</td>
<td>= 80% of teachers</td>
</tr>
<tr>
<td>3 online coaching</td>
<td>4 in-person coaching</td>
<td></td>
</tr>
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<td>sessions</td>
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Reporting on Fidelity Measured for Different Versions of the Program Model: What Story Are You Telling?

EIR Project Final Report
Fidelity of Implementation: Differences for In-Person Versus Virtual Delivery
The EIR Balancing Act

Innovative program model

High quality implementation evaluation

Serving high needs students

Supporting needs of teachers & schools

Rigorous Impact Evaluation
Opportunities to understand learning and instruction in a virtual environment vs in-person

Opportunities to learn where virtual delivery of intervention components can add value

Opportunities to learn how online instruction can be enhanced with individual and small group interactions