Making universal pre-k work: A partnership approach to quality at scale

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In collaboration with Cybele Raver (NYU) and Sophia Pappas (DOE)
Overview

• New models of applied science across developmental, prevention, and behavioral health disciplines.

• Leveraging this new model to support historic expansion of high quality Pre-K for All in nation’s largest urban school district (NYC).

• Building from:
  – Developmental/neuroscience perspective
  – Prevention sciences perspective

• Initially: innovative approaches to systems-building by providing better data + a “dashboard” for decision-making

• Now:
  – Building infrastructure to align quality with research-based practice
  – Developing plans to study differentiated professional learning and other supports

➤ Goal to build science that is more closely tied to practice/policy
Lessons learned from RCTs targeting educational disparities over the past two decades:

• We have served as PIs/Co-Is on RCTS in Chicago, Newark, New York City, and nationally (CARES)

• Scientific enterprise in education is *excruciatingly* slow and often mis-aligned
  – At this rate, will not make major dent on reducing educational disparities. Aligns with rising concerns in federal funding agencies such as IES

• Shifting priorities to emphasize use of research design, data, and analysis to support partnership, decision-making as 1st priority, answering research questions as 2nd priority.
  – “Rapid response” data collection, analysis and interpretation
  – Use of data and questions built *into* educational practice.
Leveraging advances in neuroscience

- Brain architecture begins to develop very early in life
- Higher-order cognitive processes are built from early skills in the first year (and before) and form the basis for later learning


Neuronal synaptogenesis and pruning by age

Poverty, Executive functions, and Plasticity

Clear evidence of an SES disparities in executive functions (Raver)


And intervening earlier leverages the period of the brain’s greatest plasticity.
What evidence do we have that UPK matters? Positive impacts of in Boston PreK on language and math (*as well as* executive function) (Weiland & Yoshikawa, 2013)

The implication is that Boston’s pre-k *cuts in half* the reading gap.
Addressing the “school readiness gap” in large scale RCTs: Head Start CARES (MDRC)

Randomized study testing three *theoretically distinct* strategies for promoting children’s social-emotional development in Head Start classrooms nationally

- 17 grantees/delegate agencies
- 104 Head Start centers
- 307 Head Start classrooms

**Block 1**

- Incredible Years center
- Preschool PATHS center
- Tools of the Mind-Play center
- Control center
Benefits to teachers and children of one model tested: Preschool PATHS

But, there was no consistent evidence of impact on children’s executive functions or pre-academic skills during preschool and long-term effects unclear.
A number of curricula have been shown to be effective in short term when supported with training and coaching

- Language/literacy (e.g., Dialogic Reading; OWL; Literacy Express)
- Math (e.g., Building Blocks; Pre-K Mathematics)
- Social-emotional/self regulation (e.g., Chicago school readiness project; PATHS; Incredible Years)

BUT:
- Greatest success with single target interventions
- Effects tend to fade as children enter a large number of varied quality Kindergartens
- Not clear any one will work at scale and amongst the myriad of other “asks” on teachers
Key ingredients of successful scale-up

• Central “pillars”:
  – Research-based curriculum and program quality standards
  – Capacity-building at classroom and program level (training teachers and leaders)
  – Ongoing and differentiated coaching
  – Recognition of family engagement as central educational success.

• Paired with collection, analysis of high quality data
  – Provides “pulse” of teaching practice
  – Areas of growth/challenge at the classroom/site

• Complemented by Infrastructure (“research architecture”) for ongoing use of research and of data
Pre-K for All: Access to free, full-day, high-quality pre-K for every NYC four-year-old

<table>
<thead>
<tr>
<th>Years</th>
<th>Students</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 Before</td>
<td>19,000</td>
<td>560</td>
</tr>
<tr>
<td>2014 With</td>
<td>53,000</td>
<td>1,350</td>
</tr>
<tr>
<td>2015 After</td>
<td>68,500</td>
<td>1,850</td>
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</tbody>
</table>

NYU | STEINHARDT

District Schools
Charter Schools
Pre-K Centers
New York City Early Education Centers
# Building Quality Infrastructure through Partnership

## Year 1: 2014-2015

**NYC DOE tackled:**
- Hiring 1,000 new teachers
- Trained more than 6,000 teachers, assistants, and paraprofessionals three times during the school year.
- Expanded cadre of on-site instructional and social work staff

**NYU tackled:**
- Partnership with outside evaluation team to embed direct assessments of neurodevelopment into 1,000 assessments

## Year 2: 2015-2016

**NYU/DOE partnership tackled:**
- Aligning NYC Pre-K for All Quality Infrastructure with Research-based Practice that meets the needs of a large and diverse system
  - Quality standards development and release
  - Differentiated PD including track with an evidence-based curriculum and co-design methodology for track assignment
  - Data-based decision-making for allocation of support
- Developing plans for next-stage research/evaluation
  - Spencer-funded partnership on evaluation of Explore
  - FCD-funded study of social networks
Original Goals of our partnership 2014-2015
(Morris & Raver (co-PIs, NYU), with Pappas (DOE) & Berman (CEO))

1. Develop the research architecture to provide NYC DOE leaders with the tools they need to monitor and assess the Pre-K for All initiative:
   - Collect direct assessments of young children’s school readiness
   - Link child-level data with NYC DOE’s system of classroom- and site-level data
   - Understand whether UPK teachers can collect direct assessment of school readiness
   - Tested feasibility of “rapid response” data collection and analysis.

2. Present findings graphically to inform the NYC DOE on:
   - Whether enrollment and risk patterns vary across NYC’s 5 boroughs
   - How gains made by children over the school year compare to UPK in other large urban school systems
For evidence-based decision-making, Pre-K for All leaders need easy-to-collect, quick-turnaround, reliable data

- Purchased tablets, loaded software from Jelena Obradovic
  - Adapted Obradovic’s Hearts & Flowers measure of Executive Function
  - Provides valid assessment but lowers error rate and assesses response time
  - Expedited data entry, data upload

- Android programmer hired to develop versions of:
  - Adapted Woodcock-Johnson subtests, including letter-word id, vocabulary, and applied problems.
Hearts: Touch the button on the SAME side

Flowers: Touch the button on the OPPOSITE side
Woodcock-Johnson adapted for tablet

Comparative cost:

• $3.50 per child to use adapted Woodcock-Johnson + $255 per tablet + development costs

• $796.80 per Woodcock-Johnson Test of Achievement Easel
# Tablets Used for Assessment

<table>
<thead>
<tr>
<th></th>
<th>Fall 2014</th>
<th>Spring 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablets used in the field</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>Applications</td>
<td>Hearts &amp; Flowers</td>
<td>Hearts &amp; Flowers, Digit Span, Woodcock-Johnson, PSRA</td>
</tr>
<tr>
<td>Valid assessments</td>
<td>957</td>
<td>3,408</td>
</tr>
</tbody>
</table>
On average, data are ready to analyze less than 2 weeks after a child is assessed.
Using Data Visualization to Support DOE's Efforts

Legend
- PKA sites
- Median Income
  - < $18,690
  - $18,690 - $39,478
  - $39,479 - $65,965
  - $65,966 - $110,941
  - > $110,942

PKA Sites by Median Income of Census Tracts
Turning to 2015-2016 and beyond partnership

*Shift from a provider of tools and research to a true partner, with shared objectives, leveraging insights from research, policy, and practice*
Setting expectations across a diverse delivery model: Developing Pre-K Quality Standards

- Linked new quality standards with research literature on practices that make the biggest difference
- Aligned standards with existing early childhood and K-12 systems (e.g. NYC DOE Framework for Great Schools, Head Start Performance)
- Link standards with assessments of quality already being used (e.g. CLASS, ECERS)

➢ Resulting standards reflected:
  - Promotion of a cohesive P-12 vision for quality
  - Expectations that support children’s learning
  - Support for teacher’s use of data to inform classroom instruction and family engagement
  - Greater attention to program leadership in supporting quality instruction and family engagement
Data-based decision-making for allocating training and support

NYU collaborated with the DOE in:

- Development of framework and a methodology for using initial visits and other quality data to determine level and type of on-site support

- Use of data from pre-k program assessments, site interest and other sources of information to assign professional learning tracks
Developing joint research to support DOE needs

• *Raver, Morris, Cappella, Allen (Foundation for Child Development)*: understand how professional development information is shared across social networks of teachers

• *Morris, Cappella, Kemple (Spencer Foundation), paired with private funding to the DOE*: understand elasticity of CLASS scores in its relation to the Explore track as first step in evaluation of professional development “tracks”
Summary

- Need to eliminate barriers to widespread deployment of what works – bridge the gap from micro intervention to macro policy
  - RCTs were important to build the foundation of what works
  - BUT, there is a limit to how far such research can take us in informing policy at scale
- Research-practice partnerships provide an opportunity to “move the dial” on the achievement gap by building programs at scale that are sensitive to the constraints & opportunities of the system.
  - BUT they are not easy: require shift in style of work for both agency leaders and academics
- **NOW is the time:**
  - federal and private funders are supporting these efforts
  - agency leads are open this kind of work.
  - And, of course, the needs of low-income children are still very real.
For more information:

http://steinhardt.nyu.edu/ihdsc/

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