Working the Curve

Dramatically Shifting the Human Performance Curve in Public Education

Bryan C. Hassel and Emily Ayscue Hassel
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The Performance Challenge

A class of public problems where the key issue is getting better performance out of the people and organizations carrying out the public’s work

<table>
<thead>
<tr>
<th>Two Levels of Challenge</th>
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</thead>
<tbody>
<tr>
<td>Individual</td>
</tr>
<tr>
<td>Organizational</td>
</tr>
</tbody>
</table>
Individual Examples

- Education: quality of teaching in public school classrooms
- Health care: performance of medical professionals in rural areas
- Military: how well officers help build host-nations’ institutions
Organizational Examples

- Education: performance of charter schools
- Health care: performance of for-profit vendors of mental health services
- Social services: performance of nonprofit service providers in many sectors
Performance is a Curve

- Most performers in the middle
- Fewer performers on the low and high “tails”
Enormous Payoffs to Curve Shifts

According to one careful study* of many complex professional and managerial jobs:

1 Standard Deviation of Performance = 48% Better Measurable Results

But, How to “Work the Curve”?  

- We know far too little about the shapes of performance curves, how they shift over time, and what policies and practices work the curve best  
- We need:  
  - Much more rigorous research on these questions  
  - Much more adventurous experimentation  
- Two examples from education:  
  - Teaching quality  
  - Performance of charter schools
Key Facets of the Challenge

SHAPES

• Multiple individuals / organizations determine overall performance
• Performance is a curve, not a quantity
• Shape of these curves should be focus of research and action
Key Facets, continued

FLOWS

- Curves are dynamic
- Indivs / orgs enter & leave, change performance over time
- These flows determine shape and position of curves over time
Key Facets, continued

WORKING THE CURVE

- Policymakers and public managers work the curve by action (or inaction)
- They have multiple potential strategies
- Understanding *which strategies do what* is essential
Key Facets of the Challenge

Shapes

Flows

Working the Curve
Shapes: Defining Problems and Desired Outcomes

- Performance a curve, not a quantity
- Different performance problems have different “shapes”
- Understanding the current and desired shape is key to working the curve
Performance Problem 1: Typical Performance Lags

Current State vs Desired State

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Performance Problem 2: Too Many Low Performers

Current State

Desired State
Example: NC Charter Schools

Percent of charter schools in each performance decile of all North Carolina public schools

<table>
<thead>
<tr>
<th>Decile</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>0-10</td>
<td>14.3%</td>
</tr>
<tr>
<td>11-20</td>
<td>15.5%</td>
</tr>
<tr>
<td>21-30</td>
<td>4.8%</td>
</tr>
<tr>
<td>31-40</td>
<td>8.3%</td>
</tr>
<tr>
<td>41-50</td>
<td>7.1%</td>
</tr>
<tr>
<td>51-60</td>
<td>8.3%</td>
</tr>
<tr>
<td>61-70</td>
<td>4.8%</td>
</tr>
<tr>
<td>71-80</td>
<td>9.5%</td>
</tr>
<tr>
<td>81-90</td>
<td>10.7%</td>
</tr>
<tr>
<td>91-100</td>
<td>16.7%</td>
</tr>
</tbody>
</table>

2006-07 state performance data
Performance Problem 3: Not Enough Top Performers

Current State

Desired State
Example: Elementary Teachers

- Sanders and Horn, 1996 article
- Compared growth for low-achieving students exposed to different quality teachers (lowest to highest quintiles)
- Some key findings:
  - Excellent teachers (top quintile) achieve gains far above poor teachers, but also well above middle-ranked teachers
  - Benefits of excellent teacher endure for at least two years
Implications of “Shapes”

• Before tackling a performance problem, define its shape
• Different shapes represent different problems and suggest different ways of working the curve
Key Facets of the Challenge

Shapes

Flows

Working the Curve

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Flows: Dynamics of Change

ENTRY ➔ CHANGE ➔ RETENTION ➔ EXIT ➔ SCALE-UP

Several distinct flows can be the focus of working the curve
## Entry

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Charters</th>
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</thead>
<tbody>
<tr>
<td>• 3 million teachers nationally</td>
<td>• 4,000+ charter schools nationally</td>
</tr>
<tr>
<td>• ~400,000 new hires / year</td>
<td>• ~ 400 added each year</td>
</tr>
<tr>
<td>• ~12% teachers are “new”</td>
<td>• 10-12% of charter schools are “new”</td>
</tr>
</tbody>
</table>

Entrants can have an enormous effect on the shape of the curve over time because of the magnitude of this flow.
Entry Trends for Teachers

New Teachers with Achievement Scores in the Top Decile

- 1964: 21%
- 2000: 11%

Bottom Tier Colleges Attended by New Female Teachers

- 1963: 16%
- 2000: 36%

Change

<table>
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<tr>
<td>• Teacher effectiveness changes from year to year</td>
<td>• Few studies examine how individual charters change over time</td>
</tr>
<tr>
<td>• Experience is most valuable in the early years, less so beyond</td>
<td>• These tend to find charters improving with age</td>
</tr>
<tr>
<td>• Professional development impact generally low</td>
<td>• But improvements are relatively small</td>
</tr>
</tbody>
</table>

Current evidence provides little support for “change” as a key factor in curve shapes. But more evidence is needed.
Exit / Retention

- **Voluntary**
  - Teachers can retire, pursue other careers / life choices
  - Charter school operators can decide to shutter
- **Involuntary**
  - Teachers can be dismissed
  - Charters can be revoked / not renewed
Turnover Rates in US Jobs


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Quality of Exiters vs. Stayers?

- Recent research: retention rates similar across effectiveness levels
  - Example: West & Chingos 2008 Florida study. After 5 years, 60-65% of new teachers still in profession, regardless of effectiveness level

- Still, performance-oriented system would retain more effective teachers at much higher rates than less effective
Scale-Up

Charters

• Replication of successful charters a growing trend
• KIPP, Achievement First, many others
• Could think of charter scale-up a subset of “Entry”

Teachers

• How could the impact of an individual teacher expand?
• Indirect: help other teachers
• Direct: work with more students

Scale-up a major focus of charter funders and advocates; much less discussion of scale-up of effective teachers’ impact.
Key Facets of the Challenge

Shapes

Flows

Working the Curve
Working the Curve

- Policymakers and public managers work the curve – by the decisions they make
  - Actions to change
  - Actions to maintain the status quo
- They have many potential curve-working strategies at their disposal
- We know far too little about which ones to use
# How Strategies Can Work the Curve

<table>
<thead>
<tr>
<th>STRATEGIES</th>
<th>Recruit</th>
<th>Prepare</th>
<th>Screen / Select</th>
<th>Induct</th>
<th>Design Job &amp; Career</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry</strong></td>
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<td><strong>Change</strong></td>
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<td><strong>Scale-Up</strong></td>
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## How Strategies Can Work the Curve

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<th>Evaluate</th>
<th>Promote</th>
<th>Remove</th>
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Curve-Working Strategies for Charters

- Recruitment of applicants
- Preparation of applicants
- Selection process / rigor
- Terms of the charter – especially funding
- Support / services provided to schools
- Evaluation / monitoring
- Intervention
- Closure / Renewal
Knowledge Base is Very Weak

- We make enormous investments in initiatives to work the curve...
- ...yet we know little about relative “bang for the buck”
Examples from Teaching

- Investments in building capacity of all teachers vs. focusing on recruiting and retaining the best and culling less effective teachers?
- Investments in improving recruitment or selection “technology” vs. investments in preparation / induction / development?
- Different kinds of pay reform designs?
- Different job / career designs?
Focus on One Strategy: Removal / Closure

- Gordon, Kane, Staiger 2006 study: culling the bottom quartile of new teachers could raise K-12 student performance 14 percentile points
- Charter school context: closing bottom charter schools would dramatically boost sector-wide performance over time, even without other improvements
Typical Starting School Curve

Low

High

Acceptable Performance

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What We’d Rather See
Yr 3—Some Improve...Some Fail

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Yr 4 – Some Schools Close
Yr 5 — Closed Schools Re-Open
Yr 7 - More Improve, But Not All

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Yr 7 — More Schools Close
Potential Power of Removal

- Yields dramatic curve-shift
  - even if no individual school or teacher gets better
  - even if system doesn’t get any better at selection

- Affects “Exit” directly, but indirectly affects:
  - Entry (signaling a performance culture)
  - Retention (signaling value of retained staff / schools)
  - Change (providing incentives to improve / develop)
Call for Research on How to Work the Curve

- Much richer descriptive data on the magnitude and nature of flows
- Much more focused study of how various policies and practices work the curve
- Much more analysis of “bang for the buck”
Call for Experimentation

• Much more variation in use of curve-working action by districts, states, etc.
• Coupled with research & evaluation, this is how the field will work the curve to achieve dramatically better results for children