Management Practices in Education: Descriptive Evidence

Nick Bloom, Stanford
Renata Lemos, Cambridge University
Raffaella Sadun, Harvard Business School
John Van Reenen, London School of Economics

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Big picture question is does management matter in education – can better management improve pupils outcomes?

• Poor productivity of educational systems around the world
  – Massive increase in spending but flat educational achievements over the past 30 years

• Mixed views on what can be done about it
  – All depends on pupils socio economic background (Coleman, 1966) => not much
  – Cognitive skills can be affected by institutional context (Hoxby 1996) and specific inputs (Hanusheck 1997, Rockoff 2006)

• More recent research points to importance of managerial choices
  – Charter schools studies
  – Role of basic managerial choices (Rockoff et al. 2011, Dobbie & Fryer, 2011)
This research

- We gathered large sample international data to study the relevance of management in education
  - Survey instrument based on Bloom and Van Reenen (2007)
  - Long run measurement project: +10,000 organizations in 20 countries interviewed so far

- Today we will discuss some of the first steps in this research agenda
  - Approx. 1,000 middle schools Principals in Canada, Germany, Italy, Sweden, UK and US
  - Descriptive evidence, no causal results

- Preliminary findings
  - Wide heterogeneity in school management across and within countries
  - Management positively associated with school performance
  - School size, ownership, competition and specific principal characteristics associated with higher management scores
The management survey methodology

1) Developing management questions
   • 20 practice scorecard: use of data, monitoring, targets, incentives, accountability
   • Interviewed middle schools principals for ~1 hour

2) Getting schools to participate in the interview
   • Performance indicators from external sources (not interview)
   • Endorsement letter from Department of Education
   • Run by 25 MBA-types (loud, assertive & experienced)

3) Obtaining unbiased responses ("Double-blind")
   • Interviewers do not know the school’s performance
   • Intervieweess are not informed (in advance) they are scored
Q3 Data Driven Planning and Student Transitions

- Is data used to inform planning and strategies? If so, how is it used – especially in regards to student transitions through grades/levels?
- What drove the move towards more data-driven planning-tracking?

<table>
<thead>
<tr>
<th>Score</th>
<th>(1): School may be aware of critical transitions for students, but little or no effort is made to match support services to students; data is often unavailable or difficult to use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(3): School may understand the critical transition points for students, although these are not identified in a consistent manner; some data is available, although not necessarily in an integrated or easy to use manner</td>
</tr>
<tr>
<td></td>
<td>(5): Student transitions are managed in an integrated and proactive manner, supported by formative assessments tightly linked to learning expectations; data is widely available and easy to use</td>
</tr>
</tbody>
</table>
Q7 MONITORING – Performance Review

How often do you review school performance with teachers and staff? Could you walk me through the steps you go through in a process review? Who is involved in these meetings? Who gets to see the results of this review? What sort of follow-up plan would you leave these meetings with?

| Score | (1): Performance is reviewed infrequently or in an unmeaningful way e.g. only success or failure is noted | (3): Performance is reviewed periodically with both successes and failures identified. Results are communicated to senior staff. No clear follow up plan is adopted. | (5): Performance is continually reviewed, based on the indicators tracked. All aspects are followed up to ensure continuous improvement. Results are communicated to all staff. |
## Teacher Performance by Student Characteristics

Teacher’s value-added for sub-groups of students compared to teacher’s value-added overall for history: up to 3 years

<table>
<thead>
<tr>
<th>Types of Student</th>
<th>Sample Size / (% of Sample)</th>
<th>Actual Gain</th>
<th>Predicted Gain</th>
<th>Difference from Predicted (Teacher’s Value Added)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>English Language Arts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Students</td>
<td>144 (100%)</td>
<td>0.11</td>
<td>0.04</td>
<td>0.07*</td>
</tr>
<tr>
<td>Citywide:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottom Third</td>
<td>94 (62.8%)</td>
<td>0.27</td>
<td>0.16</td>
<td>0.10*</td>
</tr>
<tr>
<td>Middle Third</td>
<td>39 (29.3%)</td>
<td>-0.13</td>
<td>-0.14</td>
<td>0.01</td>
</tr>
<tr>
<td>Top Third</td>
<td>11 (7.9%)</td>
<td>-0.32</td>
<td>-0.37</td>
<td>0.04</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottom Third</td>
<td>51 (32.5%)</td>
<td>0.39</td>
<td>0.24</td>
<td>0.16*</td>
</tr>
<tr>
<td>ELL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Education</td>
<td>15 (10.1%)</td>
<td>0.19</td>
<td>0.02</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Students</td>
<td>152 (100%)</td>
<td>-0.03</td>
<td>-0.09</td>
<td>0.06</td>
</tr>
<tr>
<td>Citywide:</td>
<td></td>
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<td></td>
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<tr>
<td>Bottom Third</td>
<td>106 (64.2%)</td>
<td>0.11</td>
<td>0.01</td>
<td>0.10*</td>
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<tr>
<td>Middle Third</td>
<td>37 (28.4%)</td>
<td>-0.33</td>
<td>-0.30</td>
<td>-0.03</td>
</tr>
<tr>
<td>Top Third</td>
<td>9 (7.4%)</td>
<td>-0.46</td>
<td>-0.45</td>
<td>-0.02</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottom Third</td>
<td>46 (25.2%)</td>
<td>0.24</td>
<td>0.14</td>
<td>0.11</td>
</tr>
<tr>
<td>ELL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Education</td>
<td>10 (6.8%)</td>
<td>-0.14</td>
<td>0.01</td>
<td>-0.15</td>
</tr>
</tbody>
</table>

The (*) means that there is a very high probability that the contribution is positive (or negative).

Source: Rockoff, Staiger, Kane and Taylor, 2011
Performance monitoring: Manufacturing

<table>
<thead>
<tr>
<th>Loom NO</th>
<th>Total Picks 'A'</th>
<th>Eff % 'A'</th>
<th>Total Picks 'B'</th>
<th>Eff % 'B'</th>
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<td>789,600</td>
<td>64</td>
<td>92,000</td>
<td>87</td>
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<td>2</td>
<td>112,800</td>
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<td>18,000</td>
<td>63</td>
</tr>
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<td>3</td>
<td>18,372,000</td>
<td>46</td>
<td>2,516,000</td>
<td>43</td>
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<tr>
<td>4</td>
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<td>45</td>
</tr>
<tr>
<td>5</td>
<td>18,000</td>
<td>46</td>
<td>1,800</td>
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</tr>
<tr>
<td>6</td>
<td>18,000</td>
<td>46</td>
<td>1,800</td>
<td>45</td>
</tr>
<tr>
<td>7</td>
<td>15,612,000</td>
<td>51</td>
<td>1,852,000</td>
<td>57</td>
</tr>
<tr>
<td>8</td>
<td>15,612,000</td>
<td>51</td>
<td>1,852,000</td>
<td>57</td>
</tr>
<tr>
<td>9</td>
<td>15,612,000</td>
<td>51</td>
<td>1,852,000</td>
<td>57</td>
</tr>
<tr>
<td>10</td>
<td>15,612,000</td>
<td>51</td>
<td>1,852,000</td>
<td>57</td>
</tr>
<tr>
<td>11</td>
<td>15,612,000</td>
<td>51</td>
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<td>12</td>
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<td>51</td>
<td>1,852,000</td>
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<tr>
<td>13</td>
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<td>14</td>
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<tr>
<td>16</td>
<td>15,612,000</td>
<td>51</td>
<td>1,852,000</td>
<td>57</td>
</tr>
</tbody>
</table>
Performance monitoring: Retail banking

Data: 09/01/2008

Porte A

Total Segmentos 61,53 83,64 79,17 73,25 52,27 0,00 0,00 34,37

Total PF 70,15 76,99 75,13 68,82 42,11 0,00 0,00 26,86

Preferencial 58,09 86,85 86,87 76,92 15,16 0,00 0,00 13,43

Porte A

SEGMENTO

Clientes
Incr. Base Ativa 0 28 146 160,0 0,00 0,00
Incr. Clientes c/ Cref... 0 153 0 0,00 0,00 0,00
Abertura Contas PF 0 120 24 11,3 0,00 0,00
Abertura Contas Busine... 0 6 0 0,00 0,00 0,00
Aquisição Com Of. Básica... 0 136 0 0,00 0,00 0,00
Conversão Of. Básica 0 313 1 0,00 0,00 0,00

Vendas
Super Auto 0 5 2 40,0 0,00 0,00
Seguro Vida 0 47 26 55,3 0,00 0,00
Seguro Residencial 0 25 8 32,0 0,00 0,00
Seguro Auto 0 6 1 16,7 0,00 0,00
Seguro Vida Master 0 2 0 0,00 0,00 0,00
Cartões 0 140 75 53,6 0,00 0,00
CF Protegido 0 295 70 23,7 0,00 0,00
Capitalização 0 58 6 10,3 0,00 0,00
Novas Cobranças Ativas 0 4 2 50,0 0,00 0,00
Títulos Liquidados 0 5301 1815 34,2 0,00 0,00

Captações - Captação Líquida
Captação Ativo 0 1371 1072 78,2 0,00 0,00
Previdência Foco PF 0 184 599 325,6 0,00 0,00
Captação Demais 0 766 -3001 -391,8 0,00 0,00

Depósito a Vista / Float
DAV / Float 0 100 1708 999,0 0,00 0,00

Empréstimos - Incr. Saldo Médio
Empréstimos Ativo 0 543 -118 -21,7 0,00 0,00

TOTAL SEGMENTOS 52,27

PERÍODO
Jan 0,00 0,00 0,00
Fev 0,00 0,00 0,00
Mar 0,00 0,00 0,00
1Tri 0,00 0,00 0,00
10% Jun 27,9%

Voltar Imprimir
Q15 INCENTIVES - Removing poor performers

- If you had a teacher who could not do her job adequately, what would you do? Could you give me a recent example?
- How long would underperformance be tolerated? How difficult is it to fire a teacher?
- Do some individuals always just manage to avoid being re-trained/fired?

| Score | (1): Poor performance is not addressed or inconsistently addressed. Poor performers are rarely removed from their positions | (3) Poor performance is addressed, but typically through a limited range of methods. Terminating an employee often takes more than a year, and is infrequent | (5): Repeated poor performance is addressed, beginning with targeted interventions. Poor performers are moved out of the school when weaknesses cannot be overcome |
Agenda

1. Measuring management practices in education
2. Describing management across schools
3. “Drivers” of management practices
4. Next steps
We found good management to be strongly correlated with better school performance.

Notes: Graph based on 354 observations with available school performance information (Canada=77; UK=85; US=120; Sweden=72). Schools performance data are zscored within country.
The correlation between management and school performance is robust to the inclusion of a wide range of controls, and similar across subgroups of the management score.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>0.119** (0.054)</td>
<td>0.185*** (0.060)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td>0.071 (0.055)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Targets</td>
<td></td>
<td></td>
<td>0.150** (0.060)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.175*** (0.055)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evidence based instruction methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.093* (0.055)</td>
</tr>
<tr>
<td>Pseudo-Fryer Index</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.122** (0.061)</td>
</tr>
<tr>
<td>Observations</td>
<td>354</td>
<td>354</td>
<td>354</td>
<td>354</td>
<td>354</td>
<td>354</td>
<td>354</td>
</tr>
<tr>
<td>Country dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Regional dummies</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>School controls</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Noise controls</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes: Graph based on 354 observations with available school performance information (Canada=77; UK=85; US=120; Sweden=72). Schools performance data are zscored within country. School controls include: number of pupils, pupil-teacher ratio, age, ownership, type. Noise controls include: interviewee tenure in post, gender, seniority; interview duration, reliability time, day of the week; analyst dummies. Robust standard errors in parentheses under coefficients.
Management scores by region are correlated with PISA rankings

Notes: Graph based on 512 observations: countries with available regional PISA data, and regions with at least 10 management interviews. (Canada=120 obs, PISA 2009; Germany=106 obs, PISA 2006; Italy=286 obs, PISA 2009).
School management practices vary across countries

Note: Averages taken across all schools within each country. 988 schools. School controls include: number of pupils, pupil-teacher ratio, age, ownership, type. Noise controls include: interviewee tenure in post, gender, seniority; interview duration, reliability time, day of the week; analyst dummies.
School management rankings differ from other sectors: Manufacturing.

Note: Averages taken across all firms within each country. 9,079 observations in total. Firms per country in the right column.
School management rankings differ from other sectors: Healthcare and Retail

Note: Averages taken across all organizations within each country. 1,183 hospitals, 661 retail sites
School management practices show a large spread

Firm management scores, from 1 (worst practice) to 5 (best practice)

Note: Bars are the histogram of the actual density. The line is the smoothed (kernel) of the US density for comparison.
Agenda

1. Measuring management practices in education
2. Describing management across schools
3. “Drivers” of management practices
4. Next steps
Size: There is a strong relationship between school size and management practice

- Top quartile: Management practice score = 2.6
- 3rd quartile: Management practice score = 2.5
- 2nd quartile: Management practice score = 2.5
- Bottom quartile: Management practice score = 2.4
Small schools are characterized by particularly poor monitoring and target management (difference in incentives is insignificant)

Gap between schools in the 1st and the 4th size quartile by sub-components of management

Management score gap between schools at the 1st and 4th quartile of size distribution

Management scores after controlling for regional dummies. Monitoring is collecting and using data, targets are the setting and effectiveness of targets, and incentives is performance related hiring, promotions, bonus and exit. Data from 988 schools.
Ownership: government ownership is associated with worse management across every industry we studied.

Management scores after controlling for size (number of employees, beds or students) and country. Data from 9079 manufacturing firms, 1,183 hospital and 988 schools. There were no publicly owned retail firms so the comparison is not possible within retail.
Government ownership is associated with particularly poor incentives management (hiring, firing, pay and promotions).

Gap between public and private ownership by sub-components of management:

- **Monitoring management**:
  - Schools: -0.4
  - Manufacturing: -0.2
  - Hospitals: -0.3

- **Targets management**:
  - Schools: -0.2
  - Manufacturing: -0.1
  - Hospitals: -0.2

- **Incentives management**:
  - Schools: 0
  - Manufacturing: 0
  - Hospitals: 0

Management scores after controlling for size (number of employees, beds or students) and country. Monitoring is collecting and using data, targets are the setting and effectiveness of targets, and incentives is performance related hiring, promotions, bonus and exit. Data from 9079 manufacturers, 1,183 hospital and 988 schools.
Competition: this appears to be good for management

Management practice score

Number of competing schools within a 30 min drive

1 As perceived by the Principal
We also looked at **Principal characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Management Score</th>
<th>Monitoring</th>
<th>Targets</th>
<th>Incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>✘</td>
<td>✘</td>
<td>✘</td>
<td>✘</td>
</tr>
<tr>
<td>(tenure in school, tenure in post)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Background</td>
<td>✘</td>
<td>✔</td>
<td>✘</td>
<td>✘</td>
</tr>
<tr>
<td>(Science vs. Humanities)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>✔</td>
<td>✘</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>(Female)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Measuring management practices in education

Describing management across schools

“Drivers” of management practices

Next steps
Conclusion

• First descriptive evidence on international differences in management in schools

• Patterns remarkably similar to other industries
  – Wide heterogeneity – even within same institutional context
  – Association management-school performance
  – Size, ownership, competition, CEO characteristics correlated with higher management scores

• Next steps
  – Expand sample to developing countries (India, 2012)
  – Move beyond correlations