Data Overload – Education and Performance Measurement

College Changes Everything
July 12, 2012

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Education megatrends

- **Education Reform**
  - Common Standards & Assessments
  - Advocacy for particular models
  - Postsecondary success

- **Focus on Data**
  - Formative assessments enabled by technology
  - Longitudinal data systems
  - Measures of teacher effectiveness

- **Stakeholder Landscape**
  - Large funders forcing focus on particular solutions
  - Corporate focus on workforce development
  - Expanded tent of education stakeholders

- **Budgets and Spending**
  - RTTT, i3, College Access Challenge Grants
  - Limited state and local education budgets
  - Private philanthropy
Three education data challenges

#1 Metrics Dilution – ‘the lukewarm tea’ problem

#2 System Limits Force Focus on Lower Value Outcomes

#3 Chasm Between Those Who Need Data and Those Who Have it
What do we want to know about students we serve?

Students ready to transition to college who are…

- Academically prepared for rigorous coursework
- Leaders who are ready to engage others to lead
- Advocates for themselves and for others
- Ready to lead fiscally and socially responsible lives
- Prepared to navigate the challenges of college
- Supported by a variety of networks
- Confident that their college of choice is a good fit
Exploring alternative approaches to measurement

5 Essentials Overall

Sample Elementary is moderately organized for improvement

Sample Elementary’s overall performance is based on its strength in each individual essential:

5E Overall: Net = 0, Moderately organized

- Instructional Leadership (average)
- Professional Capacity (average)
- Family & Community Ties (strong)
- Learning Climate (needs support)
- Ambitious Instruction (average)
Exploring alternative approaches to measurement

**What are these results based on?**
This school’s overall performance is based on the 5 Essentials shown below. Click the › to learn more about each Essential and its underlying concepts (measures).

<table>
<thead>
<tr>
<th>Essential</th>
<th>Essential Performance</th>
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<tbody>
<tr>
<td><strong>Instructional Leadership</strong></td>
<td>Average 51</td>
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<tr>
<td>In schools with strong Instructional Leadership, people, programs, and resources are focused on a vision for sustained improvement.</td>
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<tr>
<td><strong>Professional Capacity</strong></td>
<td>Average 47</td>
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<tr>
<td>In schools with strong Professional Capacity, adults work together as a community to promote professional growth and create an atmosphere of collaboration.</td>
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<tr>
<td><strong>Family and Community Ties</strong></td>
<td>Strong 61</td>
</tr>
<tr>
<td>In schools with strong Family and Community Ties, there are strong relationships with students’ families and the surrounding community.</td>
<td></td>
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<tr>
<td><strong>Learning Climate</strong></td>
<td>Needs Support 39</td>
</tr>
<tr>
<td>In schools with a strong Learning Climate, students feel safe and teachers expect students to perform their best.</td>
<td></td>
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<tr>
<td><strong>Ambitious Instruction</strong></td>
<td>Average 56</td>
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<tr>
<td>In schools with strong Ambitious Instruction, instruction is clear, well-structured, and is conducive to building and applying knowledge.</td>
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</table>
Exploring alternative approaches to measurement

Measuring the Hope, Engagement, and Wellbeing of America’s Students

The conversation about the future of American youth starts with a shared understanding of what is right with our students, rather than what is wrong. Through a review of social science and educational research, Gallup researchers chose three variables (hope, engagement, and wellbeing) as the targets of the Gallup Student Poll. These three items met the following five criteria: (1) they can be reliably measured, (2) they have a meaningful relationship with or impact on educational outcomes, (3) they are malleable and can be enhanced through deliberate action, (4) they are not measured directly by another large-scale survey or testing program, and (5) they are not associated with income status. Here are the fundamental findings that are incorporated into the Gallup Student Poll project.

- **Hope** — the ideas and energy we have for the future. Hope drives attendance, credits earned, and GPA of high school students. Hope predicts GPA and retention in college, and hope scores are more robust predictors of college success than are high school GPA, SAT, and ACT scores.

- **Engagement** — the involvement in and enthusiasm for school. Engagement distinguishes between high-performing and low-performing schools.

- **Wellbeing** — how we think about and experience our lives. Wellbeing tells us how our students are doing today and predicts their success in the future. High school freshmen with high wellbeing earn more credits with a higher GPA than peers with low wellbeing.
Exploring alternative approaches to measurement

- Knowledge and Skills
- Personal Characteristics
- Values And Beliefs

Leadership Behaviors

Core Components X Key Processes

School Performance on Core Components
- High standards of performance
- Rigorous curriculum
- Quality instruction
- Culture of learning and professional behavior
- Connections to external conditions
- Systemic performance accountability

Student Success
Value added to:
- Student Achievement
- Student Attendance
- Student Graduation
- College Enrollment

Context that might have bearing on leadership evaluation:
- Amount of leadership experience
- Length of time of current leadership in the school
- Student body composition
- Staff composition at beginning of leadership team appointment
- Level of schooling (elementary, middle, high school)
- Urban, suburban, rural
Contact information

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City Colleges of Chicago Business Intelligence Initiatives

How metrics definition and data governance will mature CCC’s decision-making processes

Monday, July 16, 2012
To help our students meet the demands of a changing world, we must focus on four critical goals.

Reinvention Goals

1️⃣ Increase number of students earning college credentials of economic value

2️⃣ Increase rate of transfer to bachelor’s degree programs following CCC graduation

3️⃣ Drastically improve outcomes for students requiring remediation

4️⃣ Increase number and share of ABE/GED/ESL students who advance to and succeed in college-level courses

Reinvention Vision

Drive greater degree attainment, job placement, and career advancement

Ensure student success

Become an economic engine for the City of Chicago

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1️⃣ Since there are economic (as well as social and personal) returns to a college credential and since higher level credentials have higher value, a credential of "economic value" is one that: a) Prepares students to succeed at the next level of education (including maximizing the number of credits that transfer where applicable), whether that be the associate degree program (for certificates) or bachelor’s degree programs, thereby increasing their potential lifetime earnings; b) Enables career and technical education program students to advance in the labor market either by moving up in their current job or securing a better job.

2️⃣ ABE is Adult Basic Education, courses are for students testing at the 1st through 8th grade levels, GED is General Educational Development for students to prepare for high school equivalency, ESL is English as a Second Language, courses provide instruction for non-native English speakers.
Reinvention employs a portfolio framework to align initiatives to the four goals; data supports project selection and tracking project success.

Business intelligence will package data as actionable information for CCC to use to measure progress on key initiatives.
Parallel workstreams are helping CCC get a handle on its data and transform it into actionable information

1. **Metrics definition**
   - The City Colleges of Chicago established a **KPI Committee** to drive to consensus-driven common measures for institutional success.
   - College executives embedded these KPI’s into **annual plans** as goals on which the Chancellor will hold progress accountable.
   - Metrics will come from **additional sources** as well.

2. **Data management**
   - A **project team** was established to tackle three data areas
     - **Data dictionary** compilation, beginning with terms requiring definition in order to fulfill tracking metrics.
     - **Data use rights** strategy and implementation
     - **Data governance** methods and incident resolution processes

3. **Business Intelligence**
   - Put an RFP out-to-bid for a comprehensive data warehouse and business intelligence solution
     - Pre-built **data warehouse** preferred
     - **Extract, Transform, Load software**
     - Presentation layer requirements, including **scorecards** and strategy mapping
     - Encompasses **professional services**, including assistance in data cleansing
CCC metrics have been developed with input from a diverse group of stakeholders, starting with a focus on student success metrics.

**Key Performance Indicator (KPI) Committee**

*Establishes common goals for institution*

Collaborative process used to identify key performance measures based on Reinvention goals, involved the following people in authorship:

- Deans
- Faculty members
- Adult Educators
- Researchers
- Administrators

- College Presidents
- College Vice Presidents
- District Faculty Council

**IT Report Catalog and Research and Evaluation (R&E) Access Database**

*Meets extant reporting needs*

Data files and ad hoc reports that IT and R&E generate to meet CCC reporting needs.

**Program-specific metrics**

*Success measurement for strategic projects*

Career- and program-specific metrics and reports developed by Reinvention teams with input from:

- Administrators
- Faculty
- Adult educators
- Department chairs

- Deans
- College Vice Presidents
- College Presidents

**Annual Plan 2013**

*Establishes common goals for institution*

Fiscal year 2013 annual operating budget strategically aligned with the four Reinvention goals.
We created a matrix to unpack what we need to track for key metrics

**Metric Attributes**

- **REI Goal**
- **Owner** (CCC Department)
- **Category**
  - Retention
  - Graduation, etc.
- **Metric Definitions**
  - Operational Definition - expressed as a rate or count
- **Data Fields** – Source, State...
- **Leading Indicator**
- **Dimensions** (or variables)
  - Location
  - Time
  - Demography
  - Instructional Area (etc.)

**Dimension Hierarchies (examples)**

- **Location**: College → Satellite and Off-Site
- **Instructional Area**: Adult Ed → Special Initiative → Gateway
Data work thus far is split into three key areas…

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Data Ownership</th>
<th>Data Dictionary</th>
<th>Data use</th>
</tr>
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<tbody>
<tr>
<td>Institute four major roles:</td>
<td><strong>Data Owners</strong> – Final arbiters on decisions related to specific data domains</td>
<td>Establish CCC data dictionary, including:</td>
<td></td>
</tr>
</tbody>
</table>
| 1. **Data Owners** – Final arbiters on decisions related to specific data domains | - Terms  
- Definitions  
- Definition Sources  
- Rationales  
- Data Sources  
- Data Fields | Create, outline and operationalize district-wide data controls that |
| 2. **Data Stewards** – Support decision-making | | 1. Evince the data confidentiality / availability trade-off |
| 3. **Data Programmers** – Implement data strategy | | 2. Provide a unified set of permissions and terms for data usage |
| 4. **Data Analysts** – Assist data programmers | | |

<table>
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| - Project team can serve as prototype for established data governance committee  
- Provides mechanism for data oversight and incident identification and resolution | - Ensure map-back of metrics elements to data-level  
- Assist in data warehouse setup | - Distinctly define data confidentiality requirements  
- Provide users with clear reasoning around extant ethics policies governing data use |

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| ✓ Established ownership with key leadership at City Colleges  
✓ Received buy-in from executive level  
✓ Convened initial data governance project meetings and established subgroups | ✓ Collected metrics, with operational definitions  
✓ Placed definitions of required terms into working data dictionary | ✓ Broke assignments around policy review and requirements definition. Will synthesize research to revise data use agreement and consistently implement permissions |
Good business intelligence is really about what is behind the dashboard curtain...

- **Source data systems**
  - Our primary source systems are, right now, PeopleSoft-based.
  - Future data sources will include GradesFirst, Blackboard, potentially a performance management system, and others.
  - Source systems will also federate with outside systems, potentially, for more seamless data integration with city agencies.

- **Data Warehouse**
  - Extract, Transform, Load (ETL) functions bring source data into the data warehouse – or, for solutions without a warehouse – directly into an analytics metadata layer.
  - Transforms are the key function, moving data from one model to another while validating for data quality.
  - By putting data in one space, “data-out” complexity, cost and risk is reduced.
  - Benefits are achieved by segregating operations data from reporting / analysis data, and by bringing all data to one place for running reports against one version of the truth.

- **Dashboards and reports**
  - Online analytical processing (OLAP) allows for storing frequently viewed data in a ready to retrieve format via data cubes, which allows for visualizing data from multiple perspectives (think pivot tables).
  - Dashboards
  - E-mail alerts
  - Scorecards
  - Strategy maps
  - GIS
  - Predictive modeling
Adoption of data-driven decision-making at CCC requires the most work at the faculty and student service levels

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<th>Executive Level</th>
<th>Chancellor championship of initiative: holding Vice Chancellors and Presidents accountable to KPI’s in annual plans assures buy-in from the top</th>
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<td>Administrator Level</td>
<td>Executive accountability of data-based evidence of meeting targets for KPI’s imbues Deans and Executive Directors with a focus on data-driven outcomes</td>
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*Top-down data evangelism – driven by the Office of Strategy and Institutional Intelligence and its Reinvention effort – will ensure focus on data-based outcomes imbues culture, driving a large portion of decision-making at the student service and faculty levels, where CCC interacts with students*

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<tr>
<th>Student Service</th>
<th>Staff are being trained in using data housed in an early alert tool, providing at-risk indicator info for individual students, which in-turn determines advising and tutoring appointment scheduling</th>
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| Faculty | Through the development of a learning analytics, faculty will have access to “data and models to predict student progress and performance, and the ability to act on that information.” (Educause, 2011). This will help with two objectives:  
  • Assurance that students receive proper interventions to promote retention, persistence, success, and completion.  
  • Promotion of informed, innovate, data-driven curriculum and student service decisions that best meet the needs of students and facilitate their success. |
Contact Information – Questions and Comments

Questions?
Comments?

Presenter Information

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