Using Data from Student Information Systems to Improve Student Success

A webinar for IO Education

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www.iebcnow.org
IO Education is partnering with the Institute for Evidence-Based Change (IEBC) to improve the way data from your student information system is used.

IEBC provides expert assistance in the form of workshops and coaching to school districts that does not require educators to be analysts; this is not about data literacy.

What you’re about to experience is taken from a number of IEBC workshops including:

- Telling Your Story with Data
- How to Integrate Data into Your Meetings
- Leading and Lagging Indicators
- Continuous Improvement Continuously
- Psychology of Data Use
IEBC’s Model of Data Use™

- Improved Student Success
- Analytics
- Human Judgment and Decision Making
- Organizational Habits
IEBC’s Model of Data Use™

**Improved Student Success**

- **Analytics**
- **Human Judgment and Decision Making**
- **Organizational Habits**
IEBC’s Model of Data Use™

- Improved Student Success
- Analytics
- Human Judgment and Decision Making
- Organizational Habits
“Without data you’re just another person with an opinion.”

- W. Edwards Deming,
  Data Scientist
It is important to collect and use data because of what we know about human judgment and decision-making

Four Villains:
- Confirmation bias
- Narrow focus bias
- Short-term emotional interference
- Overconfidence
Data also helps us get to consensus...

- Is this information accurate?
- What jumps out at you and why?
  - What are the themes?
- Does this information challenge current assumptions about this population?
- What might be contributing to success?
- What might be detracting from success?
- Is this the data we need to make a decision about a change in policy or practice?
  - What is the most important information?
  - What is missing?
Remember, data is most valuable when it can be easily accessed and analyzed with the right tools.

Dashboards

Reports & Displays

Turn numbers into students
Data vs. Information
Data vs. Information

Useful

Usable

Actionable
Issue: How do you identify subpopulations of students who are systematically underperforming as a group and get them the support they need?
1. Leading and lagging indicators
Leading & Lagging Indicators

➤ Leading indicators are in your control and lead to your hoped-for success

➤ Lagging indicators are affected by what you do to influence your leading indicators
Lagging Indicators

Tend to be our drivers because they are what legislators and funders hold us accountable for.
Lagging Indicators
Leading Indicators

3.0 to 3.5 GPA

Below 2.0 GPA

Examine Student Work

Formative Assessment Cycle

Administer Tasks

Inform Teacher Knowledge

Inform Instruction
Leading and Lagging Indicators

Lagging Indicator

Leading Indicators
Leading and Lagging Indicators

Performance on Standardized Math Assessments

Leading Indicators
- Attendance
- Formative Assessments
- Reading Skills
1. Leading and lagging indicators

2. Presenting data for action
The Typical Data Meeting
**College Prep FTIC Students**

<table>
<thead>
<tr>
<th>Milestone/Momentum Point/On-Track Indicator</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>2,557</td>
<td>2,719</td>
<td>3,102</td>
<td>3,159</td>
<td>3,185</td>
<td>3,268</td>
<td>3,237</td>
<td>3,448</td>
<td>3,409</td>
<td>3,588</td>
</tr>
<tr>
<td>Completed College Math Credits in First Two Years</td>
<td>16%</td>
<td>19%</td>
<td>22%</td>
<td>22%</td>
<td>24%</td>
<td>23%</td>
<td>27%</td>
<td>28%</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>Completed College English Credits in First Two Years</td>
<td>34%</td>
<td>41%</td>
<td>47%</td>
<td>49%</td>
<td>50%</td>
<td>50%</td>
<td>53%</td>
<td>53%</td>
<td>53%</td>
<td>57%</td>
</tr>
<tr>
<td>Attempted 12 or More Credits in First Term</td>
<td>40%</td>
<td>45%</td>
<td>50%</td>
<td>49%</td>
<td>49%</td>
<td>48%</td>
<td>49%</td>
<td>47%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Earned 12 or More Credits in First Term</td>
<td>18%</td>
<td>19%</td>
<td>24%</td>
<td>21%</td>
<td>21%</td>
<td>26%</td>
<td>24%</td>
<td>26%</td>
<td>27%</td>
<td>28%</td>
</tr>
<tr>
<td>Earned General Education Credits in First Term</td>
<td>28%</td>
<td>34%</td>
<td>35%</td>
<td>42%</td>
<td>42%</td>
<td>41%</td>
<td>41%</td>
<td>41%</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>GPA of 2.5 or Greater in First Term</td>
<td>36%</td>
<td>35%</td>
<td>40%</td>
<td>38%</td>
<td>36%</td>
<td>43%</td>
<td>40%</td>
<td>42%</td>
<td>44%</td>
<td>47%</td>
</tr>
<tr>
<td>No Withdrawals or Repeats in First Year</td>
<td>41%</td>
<td>39%</td>
<td>44%</td>
<td>41%</td>
<td>40%</td>
<td>47%</td>
<td>42%</td>
<td>45%</td>
<td>45%</td>
<td>48%</td>
</tr>
<tr>
<td>Earned 12 or More Credits in First Year (Any-level)</td>
<td>44%</td>
<td>50%</td>
<td>56%</td>
<td>54%</td>
<td>51%</td>
<td>55%</td>
<td>56%</td>
<td>60%</td>
<td>63%</td>
<td>68%</td>
</tr>
<tr>
<td>Earned 12 or More College Credits in First Year</td>
<td>19%</td>
<td>22%</td>
<td>27%</td>
<td>28%</td>
<td>27%</td>
<td>28%</td>
<td>28%</td>
<td>33%</td>
<td>35%</td>
<td>37%</td>
</tr>
<tr>
<td>Earned 30 or More College Credits in First Year</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>9%</td>
<td>11%</td>
</tr>
<tr>
<td>Earned 30 or more College Credits in First Year</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Earned 20 or More Credits in First Year</td>
<td>24%</td>
<td>26%</td>
<td>25%</td>
<td>27%</td>
<td>27%</td>
<td>29%</td>
<td>26%</td>
<td>35%</td>
<td>35%</td>
<td>41%</td>
</tr>
<tr>
<td>Earned General Education Credits in First Year</td>
<td>47%</td>
<td>53%</td>
<td>59%</td>
<td>61%</td>
<td>60%</td>
<td>61%</td>
<td>61%</td>
<td>65%</td>
<td>69%</td>
<td>73%</td>
</tr>
<tr>
<td>GPA of 3.25 or Greater in First Year</td>
<td>12%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>9%</td>
<td>11%</td>
<td>9%</td>
<td>10%</td>
<td>11%</td>
<td>12%</td>
</tr>
<tr>
<td>GPA of 2.5 or Greater in First Year</td>
<td>27%</td>
<td>26%</td>
<td>28%</td>
<td>28%</td>
<td>26%</td>
<td>30%</td>
<td>29%</td>
<td>33%</td>
<td>33%</td>
<td>35%</td>
</tr>
<tr>
<td>Earned at least 80% of Credits Attempted</td>
<td>42%</td>
<td>39%</td>
<td>44%</td>
<td>42%</td>
<td>41%</td>
<td>46%</td>
<td>45%</td>
<td>49%</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Fell Award Recipient in First Year</td>
<td>28%</td>
<td>36%</td>
<td>37%</td>
<td>36%</td>
<td>35%</td>
<td>32%</td>
<td>32%</td>
<td>37%</td>
<td>42%</td>
<td>57%</td>
</tr>
<tr>
<td>Retained in 2nd Term</td>
<td>64%</td>
<td>70%</td>
<td>73%</td>
<td>71%</td>
<td>70%</td>
<td>72%</td>
<td>74%</td>
<td>76%</td>
<td>79%</td>
<td>82%</td>
</tr>
<tr>
<td>Retained in 2nd Year</td>
<td>46%</td>
<td>50%</td>
<td>53%</td>
<td>54%</td>
<td>52%</td>
<td>52%</td>
<td>52%</td>
<td>57%</td>
<td>58%</td>
<td>62%</td>
</tr>
<tr>
<td>Enrolled in First Summer</td>
<td>29%</td>
<td>33%</td>
<td>35%</td>
<td>34%</td>
<td>33%</td>
<td>34%</td>
<td>34%</td>
<td>36%</td>
<td>37%</td>
<td>37%</td>
</tr>
<tr>
<td>Enrolled in Second Summer</td>
<td>22%</td>
<td>26%</td>
<td>27%</td>
<td>27%</td>
<td>25%</td>
<td>30%</td>
<td>30%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>No Delay in Enrollment</td>
<td>59%</td>
<td>63%</td>
<td>66%</td>
<td>68%</td>
<td>70%</td>
<td>72%</td>
<td>76%</td>
<td>78%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Underrepresented Race or Ethnicity</td>
<td>36%</td>
<td>59%</td>
<td>58%</td>
<td>61%</td>
<td>65%</td>
<td>69%</td>
<td>69%</td>
<td>70%</td>
<td>70%</td>
<td>75%</td>
</tr>
<tr>
<td>Foreign Born</td>
<td>29%</td>
<td>28%</td>
<td>29%</td>
<td>29%</td>
<td>29%</td>
<td>28%</td>
<td>29%</td>
<td>38%</td>
<td>38%</td>
<td>42%</td>
</tr>
<tr>
<td>First Generation in College</td>
<td>37%</td>
<td>37%</td>
<td>37%</td>
<td>37%</td>
<td>37%</td>
<td>37%</td>
<td>37%</td>
<td>37%</td>
<td>37%</td>
<td>37%</td>
</tr>
<tr>
<td>Average number of terms enrolled in First Year</td>
<td>1.9</td>
<td>2.0</td>
<td>2.1</td>
<td>2.1</td>
<td>2.0</td>
<td>2.0</td>
<td>2.1</td>
<td>2.1</td>
<td>2.2</td>
<td>2.3</td>
</tr>
<tr>
<td>Age 25 or older at start</td>
<td>23%</td>
<td>21%</td>
<td>20%</td>
<td>16%</td>
<td>15%</td>
<td>13%</td>
<td>12%</td>
<td>9%</td>
<td>9%</td>
<td>12%</td>
</tr>
</tbody>
</table>
### Chemistry Enrollment by Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Gender</th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>African American</strong></td>
<td>Male</td>
<td>15%</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>18%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Hispanic/Latino</strong></td>
<td>Male</td>
<td>16%</td>
<td>16%</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>15%</td>
<td>19%</td>
<td>23%</td>
</tr>
<tr>
<td><strong>Caucasian</strong></td>
<td>Male</td>
<td>22%</td>
<td>25%</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>20%</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Asian</strong></td>
<td>Male</td>
<td>26%</td>
<td>24%</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>19%</td>
<td>22%</td>
<td>21%</td>
</tr>
</tbody>
</table>
Latina Students Demonstrate Increased Chemistry Enrollment

<table>
<thead>
<tr>
<th></th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>African American</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15%</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>Female</td>
<td>18%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Hispanic/Latino</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16%</td>
<td>16%</td>
<td>17%</td>
</tr>
<tr>
<td>Female</td>
<td>15%</td>
<td>19%</td>
<td>23%</td>
</tr>
<tr>
<td><strong>Caucasian</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22%</td>
<td>25%</td>
<td>23%</td>
</tr>
<tr>
<td>Female</td>
<td>20%</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Asian</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>26%</td>
<td>24%</td>
<td>26%</td>
</tr>
<tr>
<td>Female</td>
<td>19%</td>
<td>22%</td>
<td>21%</td>
</tr>
</tbody>
</table>
Different ways of presenting the same information often evoke different emotions.

The statement that “the odds of survival one month after surgery are 90%” is more reassuring than the equivalent statement “one in ten die within one month of surgery.”

Similarly, cold cuts described as “90% fat-free” are more appetizing than when they are described as “10% fat.”
Successful information systems help you to access data in ways that are **useful** and **usable** to you; and they support presenting information in ways that lead to **action**.

They help you to get the right data to the right people at the right time (while students are still available for interventions)
1. Leading and lagging indicators
2. Presenting data for action
3. Choosing the intervention
Choosing the Interventions

Avoid the “Ornaments on a Christmas Tree Approach” of implementing a lot of disconnected and uncoordinated interventions.

Better to implement a few interventions that are...
Choosing the Interventions

- Research-based
- Match the solution to the problem
- Scalable
- High impact
1. Leading and lagging indicators
2. Presenting data for action
3. Choosing the intervention
4. Checking on impact
The Continuous Improvement Cycle

- Assessment
- Planning
- Implementation
- Evaluation
Evaluation

Formative: Carried out while programs are still being implemented. They help to form the program.

Summative: Carried out after a program is over. They are a summation of what happened.
Evaluation

When the chef tastes the soup that’s formative.

When the guest tastes the soup that’s summative.
Evaluation

Quantitative = What

Qualitative = How or Why
Evaluation

The Importance of Voice
1. Leading and lagging indicators
2. Presenting data for action
3. Choosing the intervention
4. Checking on impact
Questions?
Thank You!

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