COURSE SIGNALS: THE PAST, CURRENT, AND FUTURE APPLICATION OF ANALYTICS

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AGENDA

• Academic Analytics
• Course Signals at Purdue
• Findings
• The Course Signals Experience
• Challenges
• Possibilities
• How do you start your own analytics initiative?
A DIFFERENT FOCUS

• How can IT bring strategic impact at scale?
What can institutions do to improve student success?
• How can institutions help students take advantage of existing campus resources?
• What existing information on campus can be utilized to better identify students at risk?
• How can students become self-aware of what effort is necessary to be successful in college?
PROCESS OF ANALYTICS
DEVELOPING “ACTIONABLE INTELLIGENCE”

Challenge: How do you find the student at risk?
PROJECT APPROACH

Student Characteristics/Academic Preparation

+ Student Effort (sessions, quizzing, discussions, etc.)

+ Student Performance (grade book data)

Messages

+ interventions
GROWING INTEREST

NBC Nightly News with Brian Williams

http://www.msnbc.msn.com/id/3032619/vp/32634348#32634348
COURSE SIGNALS TODAY

• 115 instructors
• 80 courses
• 180 sections
• 17,253 students (unique)

Goal: 20,000 unique students in one semester by end of 2012-2013 school year
### Section: MATH - 105

<table>
<thead>
<tr>
<th>Student</th>
<th>4/30 2016</th>
<th>4/30 2010</th>
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Preview Of: High Risk, Low Effort E-Mail

From: Aviansh Kaul

Subject: Signals - Red, less effort

Salutation: Dear [Student]

I am sending this out due to your low percentages in class and your low usage of Sakai.

You are using the resources provided to you less than other students in your class. I want to remind you that completing all the [practice exercises] in Sakai is a very important component to the course.

Not only are the points valuable, they prepare you for the exams. You need to spend more time in Sakai and get help outside of class. If you need help, please see me in my office. [office location].

I am in each day of the week from [h:mm]AM to [h:mm]AM. You can also use the other help sources listed on the syllabus.

Please ask for help. I know you can be successful in this course.
WHAT HAVE WE FOUND--GRADES

<table>
<thead>
<tr>
<th>STAT</th>
<th>N</th>
<th>A/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signals</td>
<td>297</td>
<td>56.90%</td>
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<tr>
<td>No Signals</td>
<td>486</td>
<td>30.45%</td>
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</table>

STAT Course Using Signals

STAT Course Not Using Signals

84.51%
36.21%
63.58%
WHAT HAVE WE FOUND -- GRADES

<table>
<thead>
<tr>
<th>CS</th>
<th>N</th>
<th>A/B</th>
<th>C</th>
<th>D/F</th>
<th>W</th>
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<tbody>
<tr>
<td>Signals</td>
<td>68</td>
<td>50.00%</td>
<td>32.35%</td>
<td>8.82%</td>
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<tr>
<td>No Signals</td>
<td>120</td>
<td>36.67%</td>
<td>40.00%</td>
<td>16.67%</td>
<td>6.67%</td>
</tr>
</tbody>
</table>

CS Course Not Using Signals

- Signals: 16.67%
- No Signals: 76.67%

CS Course Not Using Signals

- Signals: 82.35%
- No Signals: 16.67%
WHAT HAVE WE FOUND--GRADES

Grades Students Received

Percentage point difference in A/B grades earned and D/F/W grades earned between Signals and the comparison cohort in the fall 2009 semester.

6.41 D/F/W earned A/B 10.97
## SIGNALS AFTER 4 YEARS

### Fall 2007 Cohort

<table>
<thead>
<tr>
<th>Number of Signals Courses</th>
<th>Cohort Size</th>
<th>1 year</th>
<th>2 year</th>
<th>3 year</th>
<th>4 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Signals</td>
<td>5,134</td>
<td>83.44%</td>
<td>73.14%</td>
<td>70.47%</td>
<td>69.40%</td>
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<tr>
<td>At least 1</td>
<td>1,518</td>
<td>96.71%</td>
<td>94.73%</td>
<td>90.65%</td>
<td>87.42%</td>
</tr>
<tr>
<td>1 instance</td>
<td>1,311</td>
<td>96.57%</td>
<td>94.13%</td>
<td>89.70%</td>
<td>86.50%</td>
</tr>
<tr>
<td>2 or more</td>
<td>207</td>
<td>97.58%</td>
<td>98.55%</td>
<td>96.62%</td>
<td>93.24%</td>
</tr>
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</table>

### Retention Rate

<table>
<thead>
<tr>
<th>Number of Signals Courses</th>
<th>Average SAT Score</th>
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<tbody>
<tr>
<td>No Signals</td>
<td>1155</td>
</tr>
<tr>
<td>At least 1</td>
<td>1129</td>
</tr>
<tr>
<td>1 instance</td>
<td>1133</td>
</tr>
<tr>
<td>2 or more</td>
<td>1102</td>
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</tbody>
</table>
## Four Year Graduation Rates

### Fall 2007 Cohort

<table>
<thead>
<tr>
<th>Number of Signals Courses</th>
<th>Cohort Size</th>
<th>4 Year Graduation Rate</th>
<th>Average SAT Score</th>
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</thead>
<tbody>
<tr>
<td>No Signals</td>
<td>5,134</td>
<td>69.40%</td>
<td>1155</td>
</tr>
<tr>
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<td>93.24%</td>
<td>1102</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Graduation Rate</th>
<th>Average SAT Score</th>
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</thead>
<tbody>
<tr>
<td>41.20%</td>
<td>1155</td>
</tr>
<tr>
<td>45.27%</td>
<td>1129</td>
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<tr>
<td>38.65%</td>
<td>1102</td>
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</table>
FACULTY EXPERIENCE
COST VS. ROI

Percentage of First Year Cohort*
Leaving Purdue

86.70%
13.30%

$18.7 million

*2009 entering cohort
MESSAGING CHALLENGE

• Email is no longer the single best way to reach students (was it ever?)
• Need standard approaches to provide a multi-modal platform for reaching students
• Messages may need to include changing icons/graphics in one system based on data from another system
INSTITUTIONAL CHALLENGE

- Data in many places, “owned” by many people/organizations
- Different processes, procedures, and regulations depending on data owner
- Everyone can see potential, but all want something slightly different
- Sustainability – “can’t you just…”
- Faculty participation is essential
- Staffing is a challenge
NEW POSSIBILITIES

- Using data that exists on campus
- Taking advantages of existing programs
- Bringing a “complete picture” beyond academics
- Focusing on the “Action” in “Actionable Intelligence”
HOW TO START – PRACTICALITIES

• Chose your team wisely
• Define your resources and timeline
• Human Subjects
• Privacy
• Security
HOW TO START – THE FUN STUFF

- Think about
  - Your question/issue
  - Your data
  - Your support
  - Your theoretical basis
  - Your possible models
  - What action will come from the information you provide
QUESTIONS?
THANK YOU

Please fill out your session evaluation!