Dropout Risk Analysis: Using Analytics to Improve Student Retention

Dr. Rick Upchurch
&
Alissa Bencks
Learning Analytics Is...

- Measurement
- Collection
- Analysis
- Reporting
- Understanding
- Optimizing
Key Predictive Indicators

• Dispositional Indicators
  – Indicators brought to the learning context by the learner
    • Age
    • Gender
    • Ethnicity
    • Current grade point average
    • Prior learning experience
    • First-in-college
    • Financial status
Key Predictive Indicators

• Activity and Performance Indicators
  – Most are quantitative in nature and most easily garnered through the LMS
    • Number of logins
    • Frequency of logins
    • Amount of time spent on course website/activities
    • Number and timing of participation in discussion forums
    • Grades
    • Quizzes
Key Predictive Indicators

• Student Artifacts
  – Essays
  – Blog posts
  – Discussion forum posts
  – Media productions
• Fully automated responses
• Semi-automated responses

Appropriate visualizations reveal patterns of risk/performance issues.
The Drop-out Process

“Dropping out of school is not a single event, but rather a long process of progressive disengagement from school that includes markers or warning signs along the path before dropout occurs.”

*Dropout Risk Factors and Exemplary Programs: A Technical Report* by the National Dropout Prevention Center at Clemson University and Communities In Schools, Inc.
What can we do?

• Review the research
• Understand the top risk factors
• Collect the right data
• Provide support
Research on Risk Factors

- Wonderlic
- National Dropout Prevention Center at Clemson University and Communities In Schools, Inc.
- The US Department of Education
Wonderlic Case Study

All Programs

- No risk factors: 41%
- At least one risk factor: 59%

Legal Program

- No risk factors: 43%
- Risk factors: 57%

Medical Program A

- No risk factors: 37%
- Risk factors: 63%

Medical Program B

- No risk factors: 42%
- Risk factors: 58%
Most frequently disclosed risk factors across programs

Disclosures by category

- Computer skills: 184
- Worry about online classes: 222
- Dropped out in the past: 494
% Drop vs. # of Risk Factors

- 0: 24.35%
- 1: 30.30%
- 2: 32.43%
- 3+: 40.91%
Wonderlic Case Study

Items that strongly predicted dropping out:

- English Skills: 50% identified as risk factor and dropped, 28% did not identify as risk factor and dropped
- Internet Connection: 60% identified as risk factor and dropped, 28% did not identify as risk factor and dropped
- Previously Dropped: 41% identified as risk factor and dropped, 22% did not identify as risk factor and dropped
Wonderlic Case Study

On Expected Pace to Complete vs. SLE Score Range

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>23.38%</td>
</tr>
<tr>
<td>20-24</td>
<td>34.69%</td>
</tr>
<tr>
<td>25-29</td>
<td>37.14%</td>
</tr>
<tr>
<td>30+</td>
<td>43.75%</td>
</tr>
</tbody>
</table>
There is no single risk factor that can be used to accurately predict who is at risk of dropping out.

The accuracy of dropout predictions decreases when combinations of multiple risk factors are considered.

Dropping out is often described as a process, not an event, with factors building and compounding over time.
Top Risk Factors

Top Risk Factors Significantly Related to Dropout

- Risk factors from all levels of education
  - * highly significant risk factor for elementary and secondary students.
  - ^ highly significant risk factor for post-secondary students.
Top Risk Factors

Individual Background Characteristics

- Has a low cognitive ability, a learning disability, or emotional disturbance
- Technology proficiency, access, and comfort (specific to online education)
(Early) Adult Responsibilities

• High number of work hours outside of school
• Being financially independent of parents
• Parenthood, especially being a single parent, and/or having to care for siblings
Top Risk Factors

Social Attitudes, Values, & Behavior

• High-risk peer group
• High-risk behavior
• Highly socially active outside of school / lacking social support in favor of school
Top Risk Factors

School Performance

• Low past academic achievement*
• Retention/over-age for grade*
• Not having a regular high school diploma^
Top Risk Factors

School Engagement

- Low or unreasonable educational expectations*
- Part-time enrollment^ 
- Delaying entry into postsecondary education after high school^ 
- Lack of connection/belonging with faculty or peers 
- Lack of effort 
- Poor attendance 
- Low value and commitment to school / graduation 
- No extracurricular participation
Top Risk Factors

School Behavior

• Misbehavior
• Aggression
Top Risk Factors

Family Background Characteristics

- Low socioeconomic status*
- High family mobility
- Low education level of parents
- Large number of siblings
- Not living with both natural parents
- Family disruption
Top Risk Factors

Family Engagement/Commitment to Education

- Low educational expectations
- Sibling has dropped out
- Low contact with school
- Lack of support / conversations regarding school
Collecting the Right Data

How do we gather all this info about students?

• Leverage existing tools
• Build / buy new tools
School Application

- Basic demographics
Collecting the Right Data

New Student Survey

- (Early) adult responsibilities
- Social attitudes, values, and behavior
- Family background characteristics
- Commitment to education
Collecting the Right Data

Standard Assessments

• Admissions Risk
• Cognitive Ability
• Skills (Reading, Writing, Math, Technology)
• Personality
Collecting the Right Data

Previous Academic Records

• Transcripts
Collecting the Right Data

Real-time Data

- Completion of assignments
- Attendance
- Participation
- Test scores / grades
- Extracurricular involvement
- Contact with instructors, advisors, or school staff
Collecting the Right Data

Student Engagement Survey

- Significant psychological investment in learning
- Pride in incorporating learning into everyday life
Providing Support

Prevention & Intervention

• The key to success is aligning the appropriate support approach according to the data
  ➢ Based on the incoming student’s profile, what sort of preventative support can we provide?
  ➢ Based on the existing student’s activity and performance, what interventions are needed?
• Formal vs. informal support programs
Providing Support

Academic Support

• Remedial support for incoming students with low skill levels
• Just-in-time tutoring
• On-demand “live” instruction
• Follow-up on missed assignments
• Feedback on failed exams
Providing Support

Technical Support

• Navigating the online system
• Participating in online lectures and discussions
• Locating assignments
• Finding resources
• Contacting instructors and other school staff
Providing Support

Life Skills Development

• Problem solving / decision making
• Time management
• Communication skills
• Stress reduction
Providing Support

Career Planning

• Development of short-term and long-term goals
• Job skills preparation
• Interview and resume guidance
Family/Social Engagement

• Events / opportunities to involve family and friends
• Outreach to encourage support from family and friends
Providing Support

Emotional Support

- Counseling
- Coping skills
Taking Action

• Take advantage of the low hanging fruit: Data and support resources that you already have access to.
• Determine what else you can feasibly measure based on our discussion today.
• Look at your data and identify the key risk factors and performance issues that are most impactful and predictive of drop-out for your school in particular.
• Identify existing support programs and interventions that can be mapped to the needs of your students.
• Determine what additional programs and interventions you can gain access to our build within the school that would have the most impact on your students
Questions?

Thank you!

Dr. Rick Upchurch, rupchurch@national.edu
Alissa Bencks, alissa.bencks@wonderlic.com
Curt Leslie, PhD curt.leslie@wonderlic.com