Learning Analytics for Career Development Programs

Garth A. Fowler, PhD
Associate Executive Director
Office of Graduate and Postgraduate Education & Training
The American Psychological Association
Today’s Agenda

- Define Learning Analytics, and discuss how to develop partners at your institutions for applying them
- Define Competency-Based Learning, and identify its components
- Introduce Bloom’s Taxonomy for creating student outcomes and criteria
- Merge all we learned! (group work)
What is Analytics?

- Analytics is a term that refers to the marriage of:
  - Large data sets
  - Statistical techniques
  - Predictive modeling

- Tool for measuring outcomes and providing data-based models for moving forward
What is Analytics?

- Analytics is well established in other realms:
  - Pandora
  - iTunes Genius
  - *Moneyball*

- Analytics is moving from the business realm into academics and pedagogy
  - Learning Analytics
Why Learning Analytics?

- Teaching and learning accountability put new pressure on educational institutions and federal agencies
  - Single-unit record
  - Performance based funding
  - Public financial accountability
  - Individual financial accountability
Why Learning Analytics?

- Educational leadership and federal agencies put pressure on programs, trainers, and faculty
  - What predicts success in our school, program, or class?
  - What individuals are at risk, and why?
  - What interventions work and which do not?
How Learning Analytics?
How Learning Analytics?

1. Start with a Strategic Question
2. Find/Collect the Appropriate Data to Answer that Question
3. Analyze that Data with an Eye toward Prediction and Insight
4. Formulate and Present in Ways that are Understandable and Actionable
5. Feedback into the Process of Addressing Strategic Questions and Identifying New Ones

The Analytics Process

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How Learning Analytics?

- Your strategic question will depend upon your level in the institutional structure, for example:
  - Provosts/Presidents will want to know about undergraduate completion rates
  - Departments will want to know about sequential learning outcomes
  - Professors will want to know about impact of quizzes, homework assignments, chat groups
Good Learning Analytics

- The most powerful analytics are learner-centric (Norris et al., 2008)
  - Have clear expectations of what learners are expected to learn
    - Student Learning Objectives (SLOs)
  - Have clear language of how learners are to demonstrate mastering SLOs
    - Behaviorally observable
  - Have criteria to assess SLOs
    - Bloom’s Taxonomy
Good Learning Analytics

- Establish a long-range plan for collecting and accessing learner data
- Many institutions have started to utilize web-based teaching resources that provide learner data (Blackboard, LMS)
- What exists at your institution?
- Who is in it?
- How do you fill-in missing gaps?
What does your institution use?
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Briefly explain your current problem:</td>
<td></td>
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<tr>
<td>Give it a code name (just for fun):</td>
<td></td>
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<tr>
<td>What about this problem lends itself to an analytics solution process?</td>
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<tr>
<td>Who would benefit if the problem were solved?</td>
<td></td>
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<tr>
<td>What is your role in the problem/solution?</td>
<td></td>
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<tr>
<td>Who has tried to solve this before? Were they successful? Why or why not?</td>
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<tr>
<td>What resources ($) may be available to you and others?</td>
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What is Competency-Based Learning?

- Focuses on the acquisition and demonstration of skills, knowledge, and abilities (SKAs)
- Success is a level of proficiency that a student can demonstrate
- Competency can be acquired outside of traditional classroom structure
  - Decoupling of credit-hour & outcome
Why Competency-Based Learning?

- Careers and jobs rely more upon competency than mere knowledge
- Many professional associations are promoting competencies over exposure to specific knowledge
  - NPA Competencies
  - APA Competencies for Health Service Psychology
Developing Competency-Based Curriculum

A competency is “a combination of skills, abilities, and knowledge needed to perform a specific task”

National Postsecondary Education Cooperative (NPEC) (2001)
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Developing Competency-Based Curriculum

- **Outcomes** are the expected result — what a learner should know, be able to do, and understand at the end of a course or program.
- **Competencies** are bundles of skills needed to demonstrate the outcomes.
- **Criteria** are measurable descriptions of learner performance against competencies.

Outcome: 
Communicate effectively.

Competency: 
Communicate ideas effectively in writing.

Competency: 
Speak persuasively.

Competency: 
Collaborate with team members.

Criterion: 
Get the audience’s attention.

Criterion: 
Establish credibility.

Criterion: 
Lead the audience to visualize how your proposal will benefit them.
Developing Competency-Based Curriculum

- Outcomes should be expressed such that students can demonstrate expertise or mastery of the competency
- Bloom’s Taxonomy provides a tiered framework for creating measurable student outcomes that can be assessed
Developing Competency-Based Curriculum

- **Knowledge**: Demonstrate acquisition of facts and information
  - arrange, define, recall, name
- **Comprehension**: Demonstrate an understanding of facts
  - classify, discuss, explain, predict
- **Application**: Apply knowledge to actual situations
  - modify, prepare, produce, employ
Developing Competency-Based Curriculum

- **Analysis:** Break down ideas into simpler parts and find evidence to support generalizations
  - compare, diagram, model, outline, select
- **Synthesis:** Compile components into a whole or propose alternative solutions
  - revise, summarize, generate, develop
- **Evaluation:** make and defend judgments
  - conclude, interpret, support, argue, assess
Summary

- Career and professional development programming should have a clear goal and/or strategic question/outcome.
- Data on student learning outcomes is necessary to evaluate progress towards goal.
- Learning analytics provides a statistical approach to data analysis based on proposed learning outcomes.
Summary

- Student-centric learning analytics incorporate student demographics and individual student progress.
- Competency based learning establishes clear criteria for student mastery and assessment of progress.
- Bloom’s Taxonomy provides a tiered framework for creating observable criteria students must demonstrate.
Worksheet #1
Strategic Question

Write the strategic question or goal relative to the career development programming you offer:

What data is needed to answer the question or demonstrate you are achieving your goal?

What data do you have and in what format?
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Where do you merge your have and have-nots?
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What data are you missing?
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Worksheet 2
Define Student Learning Outcomes

Identify an outcome expected of students/participants in career development programming. Make sure it supports your strategic goals or question for your career development programming:

Identify a competency associated with the outcome:

Identify a competency associated with the outcome:

Identify a competency associated with the outcome:

Identify measurable criteria for the competency:
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Identify measurable criteria for the competency:
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Identify measurable criteria for the competency:
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Worksheet 3
Student Data and Outcome Assessment

Develop your analytical plan.

Student’s performance on the measurable competencies from a student outcome

What trends emerge, and how do you display them meaningfully based upon your strategic question

What student elements do you have from your database
Progress Towards Strategic Goal & Formulating Action

- Identify evidence from data and analysis that support or challenge achieving your strategic goal

**Evidence of Success:**
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**Evidence of shortcomings**
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- Identify revisions and changes that maintain successful elements and provide opportunity to correct shortcomings.
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