How to use the analytical mechanisms in online public administration courses to inform learner support

Lois M Warner
Opening Questions

• How many teach online?

• How does your instructor-learner relationship differ in F2F vs. online courses?

• Are you aware of the analytical mechanism within the course delivery software?
Content

• Definitions

• Scholarship, research interests and related journals

• Potential benefits and inhibitors

• Personal experiences using LA

• Discussion
Learning Analytics (LA)

- LA is about discovering the “unobservable patterns and the information underlying the learning process.”
  Agudo-Peregrina et al., 2014

- LA is the measurement, collection, analysis and reporting of data about learners and their context for the purposes of understanding and optimizing learning and the environments in which it occurs.

- LA is the capture and processing of data that will be helpful for students and instructors at the course or individual level (Bias, 2011)
Closely Related Terms

- **Learning Management Systems (LMS)**
  Mechanisms for online course delivery - Blackboard, Canvas, eCollege, moodle, Sakai
  Data stored within LMS available for analysis. Needed to move from technical domain to practical use of readily available data (Stewart, 2013).

- **Education Data Mining**
  Data mining seeks to discover novel and potentially useful information from large amounts of data
  Educational data mining seeks to answer questions. E.g. how students choose to use educational software and how course design can improve

*National Center for Education Statistics (NCES)*
Scholarship

• How students engage with/consume learning content/curricula
• How they approach learning, create learning goals (Gasevic et al. 2015).
• Student self-direction and self-regulation studies reveal differences in the number of tools and how they are utilized in facilitating learning (Winne, 2006)
• Student choice using tools based on both internal conditions and personal goals in their learning (Lust, Elen, & Clarebout, 2013)
• ‘Personalize’ learning processes
Scholarship cont’d

- Descriptive, without any use of theory
- Philosophical, reflection without any data or theory
- Theoretical, reflection on theory without empirical data
- **Theory use, application of theory/model as a framework for study** (11%)
- **Theory generating, systematic analysis toward building theory** (26%)
- Theory testing

Viberg, Hatakka, Balter & Mavroudi (2018)
Research Interests

• Comparative forms of engagement
• Levels of engagement
• Timeliness
• Correlations between engagement and performance
• Predictors of learning outcomes
Related Journals

• Computers in Human Behavior

• Journal on Empowering Teaching Excellence

• Journal of Interactive Online Learning

• Journal of Public Affairs Education

• Telematics and Informatics
Potential Benefits of LA

• Evidence Proof of practice (success or failure), justification, remove doubt or assumption

• Nimble quickly adjust practice, immediate feedback, walk informed steps

• Grounded make changes based on evidence rather than assumption or intuition

• Revealing provide information in areas we did not know or were not aware of / or potential

Stewart, 2016
Potential Benefits of LA

• Student Centered inform learner experience, help guide the learner

• Predictive educated predictions based on preference, performance, and ability

• Change practice with evidence change what does not work, informed decisions
Benefits to Institutions

• Informs Academic Advising Processes - trends
• Informs necessary interventions e.g. plagiarism
• Provide better support to students
• Can inform on student satisfaction
• Can be used to predict college enrollment at middle schools
• Can be used to predict career success, informing alumni success
Inhibitors to using LA

• Lack of Training how / what to collect, process, and use the data

• Fear of Exposure peer will judge, reveal weakness

• Too Much Data overwhelming with amount of data to make sense

• Too Little Data (not really an issue) in a certain / meaningful area

Stewart, 2016
Inhibitors to using LA

• Lack of Ability to enact changes based on data, knowledge
• Cultural vs. Procedural, data of a cultural norm, mechanics or behaviors of teacher, ethics
• Intentionality good empirical practices, data tied to research question
• Lack of Resources limited direction in the literature, examples, resources, time
Experiences using LA

• Predict learning outcomes
• Diagnose low performance
• Identify at risk students
• Inform course design
Predicting Outcomes

- Grade for last 10 graded items
- Grades overall
- Detailed Analytics
# Predicting Outcomes

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<tr>
<th>Name</th>
<th>Due</th>
<th>Score</th>
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<tbody>
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<td>Discussion Forum 1 - Student Introductions</td>
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<td>Assignment 1 - Ethical Misconduct</td>
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<td>3</td>
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<td>Discussion 3 - Personal Ethical Dilemmas</td>
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Diagnose Low Performance

![Activity by Date](chart1)

![Communication](chart2)
## Identify At Risk Students

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<th>Name</th>
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<th>Role</th>
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Identify At Risk Students
# Inform Course Design

## Quiz Summary

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<th>Value</th>
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<tr>
<td>Average Score</td>
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<tr>
<td>High Score</td>
<td>100%</td>
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<tr>
<td>Low Score</td>
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<td>Standard Deviation</td>
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<td>Average Time</td>
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Inform Course Design

Question Breakdown

Attempts: 34 out of 34

Write a short essay of at least 250 words on one of the following topics. The essay should have an introduction, three main points and a conclusion. Given the narrow time-frame (approximately 15 minutes) and word requirements, your essay should be clear and succinct.

For 6 points

- Describe Birkland’s Agenda Universe, identify one issue currently on the federal government’s agenda and state its current status on the agenda.
- Explain what a symbolic public policy is, provide one example and explain why it exists.

<table>
<thead>
<tr>
<th>Answers which scored in the top 27%</th>
<th>16 respondents</th>
<th>47%</th>
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<tbody>
<tr>
<td>Answers which scored in the middle 46%</td>
<td>11 respondents</td>
<td>32%</td>
</tr>
<tr>
<td>Answers which scored in the bottom 27%</td>
<td>7 respondents</td>
<td>21%</td>
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Inform Course Design

Question Breakdown

Attempts: 34 out of 34

Public policy is the sum of government activities, whether acting directly or through agents, as it has an influence on the life of citizens.

<table>
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<th>True</th>
<th>32 respondents</th>
<th>94%</th>
<th>94% answered correctly</th>
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<tbody>
<tr>
<td>False</td>
<td>2 respondents</td>
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Discrimination Index: -0.02
Discussion

Thank you!