Big Data in Education

by Piotr Mitros
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This presentation can and should be shared.
Communities

I. Psychometrics → Traditional statistics, assessment and measurement
II. EDM/AI-ED → Computer scientists interested in education
III. LAK → Educators interested in technology
IV. (And quite a few others)
Critical Thinking and Problem Solving
Creativity and Innovation
Communication and Collaboration
Cross-Disciplinary Thinking
Global Awareness
Civic Literacy
Flexibility and Adaptability
Initiative and Self-Direction
Social and Cross-Cultural Skills
Productivity and Accountability
Leadership and Responsibility
30 students  10,000 students
0.2 std. div  0.01 std. div
Summary data  Complete clickstream
Individual activity  Cross-activity
Single discipline  All disciplines
Metrics vs. KPIs

Summative → formative

Measurement → learning

(Often confused with quantitative vs. qualitative)
# events

maximum height

peak point

area

start point width end point

height

Juho, et. al. 2014
Gruzd, et. al. 2014
Q: Who or what makes federal (national) laws in the US?

Options:
- Senate
- President, Congress
- Judicial Branch
- Government
- House and Senate
- Legislative Branch (House of Representatives and the Senate)
- Miscellaneous

Answer:
- Senate
- House and Senate
- Legislative Branch (House of Representatives and the Senate)
- Miscellaneous
Common research questions

I. Who are my students? What do they know? How do they behave? How are they feeling? How likely are they to succeed?

II. How is my course? What resources are working? Which ones aren’t?

III. Which courses should I recommend to students?

IV. How are they communicating?
Challenges

I. Privacy
II. Velocity: speed * size with JOINs
III. Integration
IV. Training
V. Communications
Questions?
Most data isn’t “big,” and businesses are wasting money pretending it is
Giving Employers What They Don't Really Want

By Robert J. Sternberg

Often what we think other people think is not what they think. For example, Michael Barnes and I conducted a study some years ago...