Caveats

• I am a lawyer and policy wonk
• My expertise is in law, communications, policy analysis, and federal and state government
• I represent education policymakers
• This example is different from other industries in one major way
Big Data & Education

How EDUCATIONAL DATA MINING & LEARNING ANALYTICS can help:

EDUCATIONAL DATA MINING CAN ANSWER QUESTIONS LIKE:
- What sequence of topics is most effective for a specific student?
- Which student actions are associated with better learning and higher grades?
- Which actions indicate satisfaction and engagement?
- What features of an online learning environment lead to better learning?

LEARNING ANALYTICS CAN ANSWER QUESTIONS LIKE:
- When are students ready to move on to the next topic?
- When is a student at risk for not completing a course?
- What grade is a student likely to receive without intervention?
- Should a student be referred to a counselor for help?

Credit: CollegeStats.org
Big Data & Education

Student Privacy in Peril: Massive Data Gathering With Inadequate Privacy and Security

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Why a ‘Student Privacy Bill of Rights’ desperately needed

A day in the life of a data mined kid
Orwellian Technology

Some schools use eye scanners and palm prints instead of student ID cards. The information, nearly as unique as DNA, is typically held by third parties. Many states have outlawed biometric data collection.

Radio Frequency Identification chips, often embedded in student IDs, can make it possible to track students’ movements on and off the bus and in school, revealing potentially sensitive information.

Students may wear devices that record their activity during the day and night. The data can be used for reports available to parents and administrators.

Students may be asked to wear heart-rate monitors in PE, and grades may be based how hard a student works out.

Teachers use behavior management systems to dole out positive and negative feedback in real time. Each child’s status may be visible to the class. Behavior data can be used to create reports for parents and administrators.

Data analytics programs record every click, key stroke, and pause students make while working on digital materials. The data is used to create detailed academic profiles of students’ strengths and weaknesses that can be tailored learning to individualized needs.

Credit: Marketplace
2014 Legislative Session

110 bills related to student data privacy in 36 states

Credit: The Data Quality Campaign
What Policymakers Are Thinking

• Education data should only be collected for articulated purposes
  – What questions do you want answered?
• When the information needed to answer the question is sensitive, you must balance privacy with educational innovation
• Worries about free software and apps may lead to bans
• Discrimination through algorithms – how will algorithms generally created by men who are autodidacts discriminate?
• Will tech put children on paths they can’t escape?
What Information Do Policymakers Need?

- What information policymakers need from technology providers in order to trust the use of big data in education.
  - Tech providers must become more comfortable communicating about the value of products – not just “this will improve how children learn,” but “this is how my product will help children learn + explanation.”
  - More studies need to be done to show the value of big data in education.
  - “Privacy by design” should be incorporated into every product and business model.
  - Adequately protecting security will help relieve privacy concerns.
Biggest Challenge

• The biggest challenge that big data in education – and big data in many other fields – faces is that its use could be banned by state policymakers before the benefits of big data are realized.