

# Design of theoretically-informed analytics for knowledge building

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# Some problems with the design of analytics for knowledge building

- 1. Your “big data” isn’t that big
- 2. Don’t confuse “rich data” with “big data”
- 3. Think carefully about the questions you’re interested in asking (and possibly answering)
- 4. Think about who you’re designing for: researchers, teachers, students, administrators have different expectations, as do experts and non-experts
- 5. Choose the best toolkit for the job, not the one you’re most comfortable with

“Not really”

# (Not really) big data

- Megabytes, not terabytes or petabytes
- No need for overly capable analytics engines

# (Not really) rich data

- Referring here to electronic traces, not extensive data collection including video
- Think carefully about how to include richer data stream in electronic traces

# (Not really) predictive analytics

- A large part of “learning analytics” concerns itself with the creation of predictive models (of, for example, student retention)
- This is probably not what we’re interested in BUT...
- We might be interested in predictive models of student performance to rethink assessment

# (Not really) individualized instruction

- Another large part of learning analytics has to do with the generation of students models as a precursor to individual instruction
- Again, probably not what we're interested in BUT...
- Might be interesting to think about misconceptions

# (Not really) designed for all users

- Designing for multiple types of users is exponentially more difficult (and expensive) than specialized designs
- Consider the different needs of students, teachers, administrators, and researchers
- Also think of cross-cutting dimensions like “expert data analyst” vs “novice data analyst”



# (Not really) the best toolkit

- Be careful when the technological tail wags the pedagogical dog!
- Encourage “I don’t know how to do that, yet” over “That’s really hard”

# Some solutions?

- Theoretically-driven designs (not “post-theoretical”) from different disciplines: how can these be articulated with each other? Knowledge Building, Human-Computer Interaction, what else?
- Knowledge Building is an integrative model: maybe we should stop taking a reductionist approach to analytics (and consider combined dashboards?)
- Focus on interactivity rather than static analytics