

**Jere Confrey**  
Joseph D. Moore Distinguished Professor  
Mathematics Education and Learning Science  
North Carolina State University





# Learning and Teaching Issues

- *Emphasis on multiple sources for assessment including identity, persistence, socio-emotional*
- *Interesting ways to build connections to careers and credentialing*
- *Increasing data-driven recommendations in real time*
- *Open learning opportunities*
- *Explicit models of learning and strong use of theory*
- *Paths and profiles to proficiencies/competencies*





# Infrastructure Issues

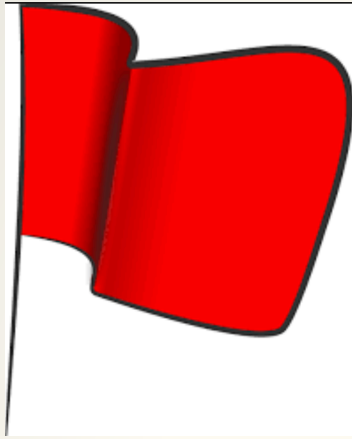
- *Protocols for data sharing, tools, and help with for work flow: (Organize, interpret, extract, model, visualize)*
- *Dashboards for comparative analysis ease*
- *Incentives for data sharing including metadata with video*
- *Importance of collaboration, transparent and trust to get change*



# Design Issues

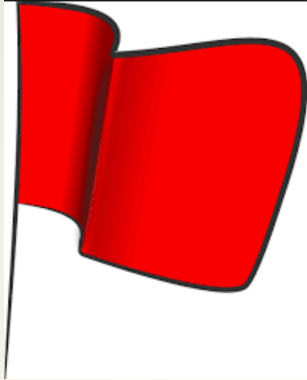
- *Dimension of “big”: tall in participants, wide in observations fine in frequency long in time span and deep in theory relevant*
- *Importance of questions--- complex open questions ( knowledge, cognition, learning, metacognition, instruction, )*
- *“learning is not a spectator sport” Activity on and off the computer, context of activity commenting on each others’ work, inclusion of teachers*
- *Including and leveraging of existing tools (chats, blogs, google hangouts, with simulations) instead of building anew.*





## Really, be wary...

- *Oversimplification of what data are in education especially relative to classroom instruction (click stream vs, interactions, grouping, and student work, reflection, resources)*
- *Belief that computer scientists can solve education's problems by using computer algorithms for data (need researchers and practitioners in the partnership)*
- *Too much focus on features vs. questions What are the sets of questions we could address*
- *Empiricism*



# Really, be wary...

*Worries about Longevity of Data*

*Who organizes and uploads data? Is this in the data management plans?*

*People are paralyzed facing something they don't understand. IRBs are stuck there*

*Is it better that commercial enterprises can do more than academics?*



# What made me uncomfortable in a good way



*Pay attention to politics and culture around big data up front*

*“Predictions alone are of marginal value. Predictions without actions are troubling”*

*There is an explosion of data sources, across data sources is better modeled (low resolution of multiple sources—actionable insights faster) How do you get in front of people that need to understand it...*

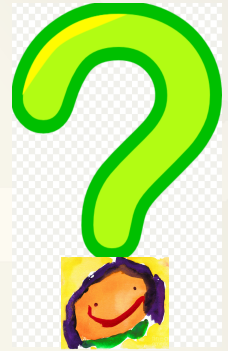
# What made me uncomfortable in a good way



- *Predictive analytics, targeting, profiling: Are we ready to embrace these for a social good, and who is or is not on board*
- *Need to coordinate scale: micro, meso, macro*
- *How does one resolve differences in results and conclusions in a public space*
- *Importance of partnering rather than proliferating tools and solutions to data management and analytics*
- *Issues of grouping possibilities and who decides?*



# What made me uncomfortable in a good way



- *Help people in their work flow in relation to outcome (all audiences- researchers, teachers and students)*
- *Conceptualize “digital learning systems” that show how they leverage feedback and support experimentation writ large*
- *Demand clarity and evidence about how the data are being used especially across sites relative to synthesis vs. resolution*